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Engineering Information on Electrostatic Shields

Unshielded transformers are adequate for applications desiring to break up ground loops. However, for today's more sensitive electronic applications single shielded transformers are recommended.

Higher attenuation ratio transformers require all wiring, shielding, grounding and installation practices be commensurate with the transformer shielding to keep from defeating the integrity of the common mode attenuation of the installation as a system. For example installing unshielded output wiring will reduce the common mode isolation of the installation.

The Electrostatic shield is made from soft pure copper foil placed between the high voltage and low voltage transformer winding. A copper wire is brazed to the shield and is grounded to the chassis of the transformer. In order to keep the shield from shorting (2) two layers of nomex 410 insulation are laminated with the copper foil and wound over the low voltage winding. The shield overlaps the primary and secondary windings by 2 inches and the insulation is extended past the shield.

A typical three phase unshielded isolation transformer will have a common mode attenuation of 12 to 20 DB. Single shielded transformers 60 to 70 DB and multiple shielded transformers are 70 to 90 DB and box shielded transformers are 100 to 150 DB.