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SLC4000TechNote09_GroundingShieldingAndWireRouting

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******With all modern electronic devices in industrial settings, proper grounding, shielding, and wire routing is extremely important.******

Grounding

The low voltage circuit common on the Selectronix Superstep controllers is TB3, and TB6. It is isolated from the line control voltage and relay connections.
Connecting the low voltage circuit common to earth ground is optional, however extreme care must be taken not to introduce ground loops and induced and capacitally-coupled ground noise. Verify that all field wiring is in accordance with local electrical codes.

Shielding

Shielded twisted pair wire is recommended for wire runs which are in close proximity to power wiring or other sources of electromagnetic interference (EMI).

When using shielded wiring, the shield should only be terminated at one end to prevent ground loop currents.

- 1st choice is to terminate the shield at the source end's signal common.
- 2nd choice is to terminate the source end to earth ground.
- 3rd choice is to leave both ends of the shield unterminated.

EMI may originate from conducted, induced, or capacitive sources.

Route signal wires away from the AC control power and relays outputs.

- Avoid cable tying low voltage wiring to ANY AC wiring, especially high current wiring for contactors.
- Where low voltage wiring must be in close proximity to AC wiring:
  - Try to route low voltage wiring as much as possible non-parallel to the AC wiring. Consider "air-lining" the low voltage wiring instead of packing in a cable trough.

EMI Reduction Components

For installations where noise-producing machinery, pumps, or poor incoming power quality is present:

- Installing the following devices may reduce the EMI to an acceptable level.:
  - **SLC4082, Line Filter**
  - **SLC4083, Ferrite Core**

Questions? Call or email us at (425) 788-2979 or techsupport@selectronix.us.