REO-USA

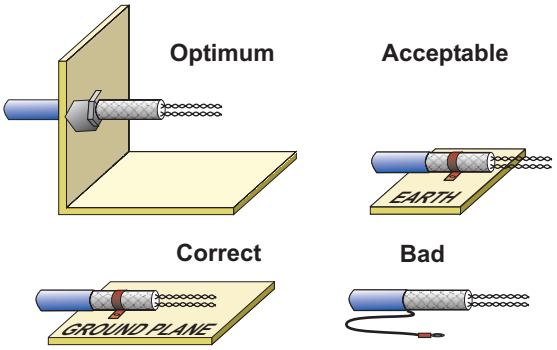
Power Cable Routing

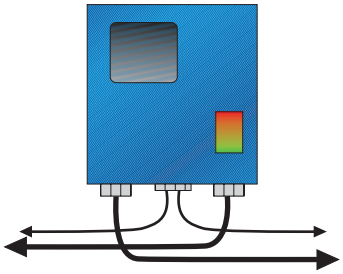
July 2005

Screen Connections

To ensure that the lowest possible levels of radiated emissions occur in the >10 MHz region, supply cables within electronic equipment should be kept as short as possible, especially the cables that connect the EMC filters to the mains supply.

Output cables from switched power supply modules, Inverter Frequency Drives and other similar equipment, should both be screened and kept as short as possible.





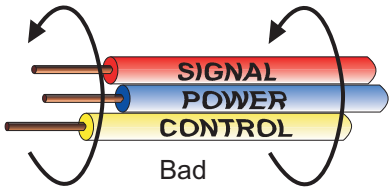
Power cable routing for high frequency switching controllers

In a control panel there are always areas where the interference from cables is greater than in other areas. Special care must be taken to prevent interference from being generated because of incorrect cable routing. A common fault is the crossing of power input and output connections to drives or filters, or running them alongside each other, Which can cause high switching losses in the semiconductors, leading to component failures and should be avoided.

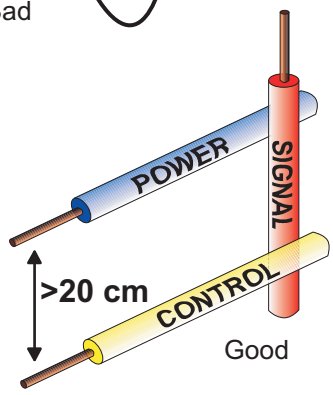
As a general rule, the level of interference increases as the clearance between cables reduces, as a squared relationship. Conversely, doubling the distance between cables quarters the level of interference.

Cable runs

It is important to ensure that signal, control and power cables do not run alongside each other.

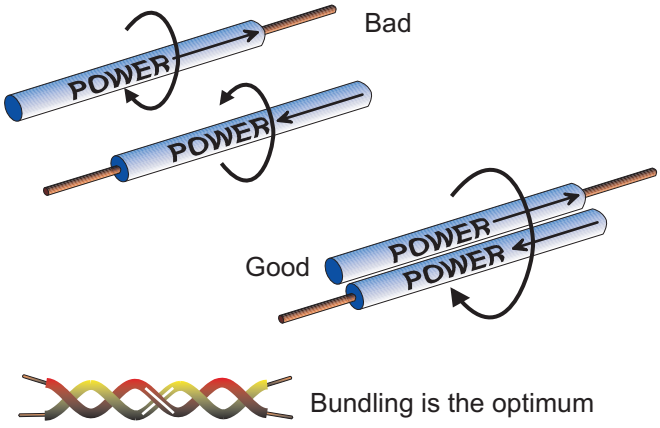


By separating and providing sufficient clearance, or by laying signal cables at right angles to power cables, cross-coupling can be reduced considerably



Out and return cables

Return current carrying cables for either power or signals should be laid in very close proximity to their corresponding outgoing cable. Even if it is one out and several returning, they should be bundled or twisted together. These wiring methods will greatly reduce radiated emissions and susceptibility from interference.



3250 North Post Road, Suite 132
Indianapolis, IN 46226
Phone (317) 899-1395 Fax (317) 899-1396
www.reo-usa.com info@reo-usa.com