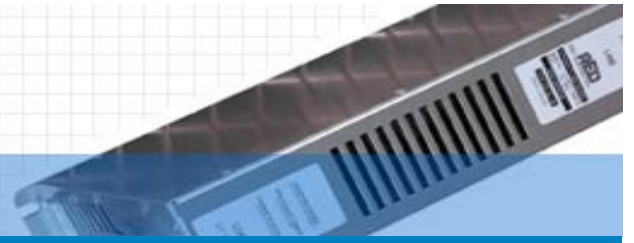


### Installation Guidelines

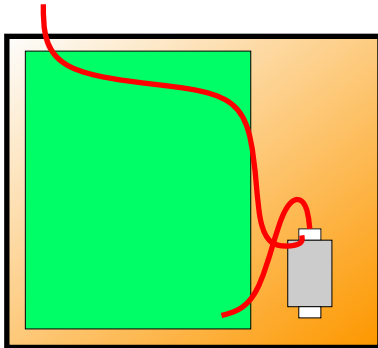


#### Position

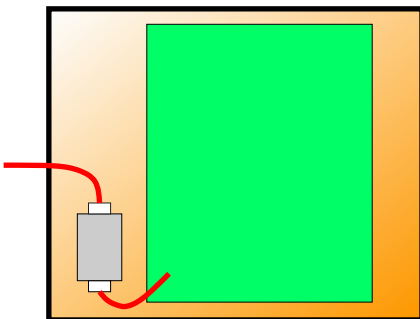
Normally the filter is positioned as close as possible to the point where the supply enters the control panel. However with more complicated layouts, where there is a mixture of control and power circuits, then the filter should be located close to the source of interference. Sometimes a piece of equipment may have it's own special filter, as in the case of a frequency drive, in which case the filter is fitted adjacent to, or under the inverter.

#### Cable routing

The correct operation of a filter can be compromised by incorrect wiring. There should be maximum separation between external input and output cables and also between internal filter and external cables. Otherwise cross coupling will occur.



An example of bad filter position and cable routing.



A much better arrangement.

#### Earth bonding

For correct operation filters rely on a good connection to earth. The earth conductor should be as short as possible and have a very low inductance. The ideal method of earthing is to use a non-painted chassis plate for the reference plane and to have metal to metal contact, at multiple points, between this and the filter housing. It is also very important to avoid any earth conductor loops. A much better arrangement is to connect earths in a star configuration, using a central earth stud welded into the chassis plate.

#### Earth leakage current

Earth leakage current is a current that is created by the Y capacitors in the filter that are connected to earth, together with stray capacitance. This current is an important characteristic of filters when providing suppression. There are a number of situations where this leakage current must be limited e.g. for personal safety, circuits with earth leakage trips and IT networks.

Typical values are 0.75mA or 3.5mA. However, fixed equipment permanently wired may be allowed up to 5% of phase current (providing appropriate warning labels are fitted). When a number of filters are used together the earth leakages can accumulate to an unacceptably dangerous level

After filters are installed they must be checked to ensure that the possible earth leakage current corresponds with local regulations.

It is also dangerous to use filters on supplies that have a frequency higher than that on the rating label.

#### Current Rating

Always check that the filter is correctly rated for the true current drawn by the load. This is not always as straightforward as it appears. For example a capacitor and rectifier load, found typically in switch mode power supplies, has a high peak current relative to RMS. The inductors in a filter will saturate if the current is too high and so will not function correctly.

#### Cooling

Generally filters are designed to operate at temperatures of up to 85°C when there is a high ambient and with continuous current flow. Therefore it is important to allow sufficient clearance, of at least 6cm, for air circulation. Filters with air vents should always be mounted in the correct orientation to allow a good through flow of air.

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