

Connecting Vega to Maximise EMC performance.

Good EMC performance comes by carefully considering the installation of the power supply. Installation without due consideration to cable/PCB layout can lead to current carrying loops that can radiate noise into the system and that can have noise currents induced into them.

What is most important is that cables/PCB tracks are arranged to minimise current carrying loops that could radiate and to minimise loops that could have noise currents induced into them. Treat all cables and all PCB tracks as radiation sources / receivers and try and minimise their interaction.

Vega power supplies are designed to comply with EN (European Normative) radiated and conducted limits when properly installed. Vega also complies with EN limits for mains distortion.

Radiated and conducted performance can be further enhanced by :-

1) Inclusion of a proprietary mains input filter. Lambda has a wide range of suitable mains filters available for all circumstances. Contact Technical Support at Lambda for advice and details on specific filter performance and attenuation or for advice on designing for good EMC performance.

| Type of noise | Connect type | Vega450 | Vega650 |
|----------------------------|--------------|------------|------------|
| Wideband | Block | MB1210 | MB1216 |
| | Faston | MF1210 | MF1216 |
| High attenuation. | Block | MXB1210-33 | MXB1220-33 |
| | Block | PNF1210-F | PNF1215-F |
| Narrow band Pulse noise | Block | MYB1210-33 | MYB1220-33 |
| | Faston | MAF1210-33 | MAF1215-33 |
| High attenuation | Stud | MAS1210-33 | MAS1215-33 |

2) Enclosure in a metal rack with suitable EMC gaskets. Technical support can assist in specific recommendations.

The conditions under which Test measurements are made for Vega is available in the application note "Vega EMC Report".

Always adhere to these outline rules :-

Use twisted pairs for power cables with as tight a twist as possible for the thickness of cable used. (Always try to minimise projected area of power carrying loops to minimise radiation).
For PCB's run all power tracks back to back.

Use twisted pairs for sense cables with at least 1 twist per cm. (Always try to minimise projected area of non power carrying loops as well, this will minimise noise currents being induced in signal carrying cables). Do not twist power cables and sense cables together.

Try to avoid running power and sense cables together in the same cable harness to avoid coupling.

Do not run any output power or signal cables close to or interwoven with mains cabling.

Keep all cable runs as short as physically possible; power, mains and control.

The earth for the system should always be a "starpoint". The "input" earth should come from the filter / inlet of the user equipment and go to a "starpoint" as soon as possible. All other earths should go from this central starpoint. The PSU earth should be connected direct to the starpoint.

Be careful to ensure that there are no earth loops in the system.

Always de-couple the load using approximately 10 -1000uF of capacitance per Amp of running current . Fit the capacitor as close as is possible to the load.