How to power your medical applications

Questions and answers

MOUSER ELECTRONICS | TRACO POWER

Question 1

About the two fuses: Two melting fuses would open only one of them. Or does it need to be a single device that opens N and L simultaneously?

Two melting fuses will be accepted by safety agency. We are not aware of a requirement of synchronous fuse tripping. However, the system must always be safe, even in a single failure condition, which is including tripping of overcurrent elements

Question 2

A tool for RF or mmWave ablation will bring high power over the patient. Is there also a DC voltage limitation on such tool (even if today the DC voltage is 0)?

There are some examples of medical high voltage applications. Based on this, there are options to provide high voltages to the patient. But this relates to the application and your product.

Question 3

Is the 500µA leakage current total for the PSU i.e., including both X & Y capacitors and parasitics?

500µA is specified for earth leakage current. For creating this leakage current, the Y-Caps are dominant. The X-Cap doesn't play here a role.

Question 4

Is an auto-reset fuse allowed for the DC circuit?

We have application samples in which a resettable fuse was used.

But from our understanding it will depend on the application and the risk you have to manage in terms of safety and the single failure condition requirement.

Question 5

Where can I find the documents for my risk analysis?

Traco will provide this document directly to your safety agency due to the confidentiality if the information shown in the document (BOM, design information), etc.)

Question 6

There are thermal considerations for my medical product (i.e., max. surface temperature). How can I find out where the hotspots are in your product?

Traco will support you and provide information about the hotspots and under which worst-case conditions they are reached.

Question 7

Is connecting the minus of the DC-Output to PE to improve EMC allowed?

It's allowed but will usually make EMC worse unfortunately. Reason is common-mode-noise.

It may need additional EMC-filter components.

Question 8

Do you have suggestion about to manage power supply for devices for cardiac applications?

Create a safe low voltage circuit in a first step with 2xMOPP power supply. Ground the output (take care about EMC).

Then, use low-capacity DC/DC-converter to power up live parts of your application.

Question 9

I fail in the EMC test. Which options do I have?

In a standard product you must build around the solution around the power supply. The power supply itself is fully EMI-compliant, but on the systems level, it depends as well on your application.

However, Traco will support you in finding the root cause, coupling path and best filter solution to minimize the noise level.

Question 10

For existing equipment will it need retesting to the 4.1 edition of the EMC immunity?

Most likely yes, as the requirements change and become harder in a few points.

And you have to consider that a risk analysis needs to be provided as well. Without practical results, it may become hard to proof the immunity of your system.

Question 11

Are stronger PFC requirements coming into consideration on medical devices?

The medical requirements are similar or even in line with other standards, regarding harmonics and power factor. There is no stronger requirement.