

How to Avoid the Wrong Power Supply



FOCUS:

2 SPACE

Considering Size vs. Cost

- For a given power level, the smaller the supply, the more expensive it will be
- A smaller supply may be needed due to size and weight restrictions, but a larger supply may fit budget restrictions
- Larger supplies may be better for budget, but the design will need to compensate for the extra size and weight

4 COOLING METHOD

Do I Need Active or Passive?

- The type of cooling needed will be determined by the amount of heat you need to transfer
- If a low amount of heat needs to be transferred, passive cooling can be used
- Passive cooling includes cooling by conduction (heatsink) or natural convection
- Passive cooling is best for supplies that are more efficient and are big enough to transfer heat by air
- Active cooling needs to be used in supplies with large level of heat transfer
- Active cooling involves elements that are actively cooling the supply (ex: fan) which can transfer heat faster than the passive method
- Active cooling results in lower reliability due to moving parts

INSTALLATION

1 CLEARANCE

Is There Enough Between Supply & Equipment?

- If there is not enough clearance, power supply may not be able to transfer heat to the surrounding area
- If the supply is too close to equipment, noise, heat, and dust can cause failure. Most of these can be remedied by adding extra parts
- The best way to avoid failure is to reference the installation manual and make sure there is enough clearance

3 DISTANCE BETWEEN

SUPPLY, LOAD, & INPUT POWER

Is There Enough? Is a Harness Needed?

- If supply and load are too close together, shielding and EMI protection could be needed
- If there is too much distance, a harness will be needed to connect the supply to the load
- Adding a harness will add extra capacitance and inductance to the input
- Remember that inductance can cause extra voltage and slow the current change at the input
- The type, size, endings and connections of the harness wires will all affect the supply
- The harness needs to be placed in a safe place

5 HEATSINK

Is One Needed?

- If supply is designed to be conduction cooled, adding external heatsink can help transfer heat from the supply
- Adding a heatsink can extend life of supply
- External heatsinks are usually available for supply
- Adding a heatsink makes the supply larger and heavier