

How to Avoid the Wrong Power Supply



FOCUS:

INPUT VOLTAGE CONDITIONS

2 POWER FACTOR CORRECTION

When to Add PFC

- Power factor below ideal level for supply
- More power needed to input
 - › PFC can help change perceived power required for a supply
- Wider input voltage needed
 - › PFC can supply universal AC input voltage range of 90~264VAC as well as a fixed DC voltage for supply to operate from
- Total Harmonic Distortion issues
 - › THD causes problems with interface, EMI, and degradation of conductors and insulating materials
 - › Non-sinusoidal waveforms that cause THD can be remedied with PFC
- PFC/THD regulations
- PFC adds double processing or power resulting in more loss
- PFC causes more heat from the supply

1 INPUT VOLTAGE RANGE

Do You Need a Wider Range?

- Input ranges are determined based on application
- If range is not wide enough, supply will not operate properly
- A wide input voltage range will be needed if:
 - › There is a high voltage drop causing wide source voltage swings
 - › There is a high hold up time required
 - › Supply will be used in foreign countries and universal range of 90~264VAC should be used
- Using a wider voltage range reduces need for several part numbers

3 INRUSH CURRENT

What to Remember

- High current needed at startup to power charging element in supply
- Max inrush current Set by power supplier- *Do Not Exceed!*
- An inrush current that is too high can result in disconnect from circuit breaker or shorten the life of the supply
- If inrush current is too low, any interruption of input voltage will result in quick loss of power
- If supply has too fast a start up time, energy storage capacity needs to decrease in order to lower inrush current
- If supply requires a slow startup time, it is much easier to lower inrush current