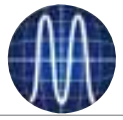
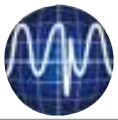
EMERALD POWER

"Clean Power For a Greener Tomorrow"

9 Power Problems and Their UPS Solutions

Power Problem	Description	Cause	UPS Type
1. Power Failure 	A total loss of utility power.	Can be caused by a number of events: lightning strikes, downed power lines, grid over demands, accidents and natural disasters.	Standby UPS, Line Interactive UPS, True On Line UPS
2. Power Sag 	Short-term low voltage.	Triggered by the startup of large loads, utility switching, utility equipment failure, lightning and power service that's too small for the demand. In addition to crashes, sags can damage hardware.	Standby UPS, Line Interactive UPS, True On Line UPS
3. Power Surge (Spike) 	Short-term high voltage above 110% nominal.	Can be caused by a lightning strike and can send line voltages to levels nominal in excess of 6,000 volts. A spike almost always results in data loss or hardware damage.	Standby UPS, Line Interactive UPS, True On Line UPS
4. Undervoltage (Brownout) 	Reduced line voltage for extended periods of a few mintues to a few days.	Can be caused by an intentional utility voltage reduction to conserve power during peak demand periods or other heavy loads that exceed supply capacity.	Line Interactive UPS, True On Line UPS
5. Overvoltage 	Increased line voltage for extended periods of a few minutes to a few days.	Overvoltage can be triggered by a rapid reduction in power of a loads, heavy equipment being turned off, or by utility switching. The results can potentially damage hardware.	Line Interactive UPS, True On Line UPS
6. Electrical Line Noise 	High frequency waveform caused by or EMI interference.	Can be caused by either RFI or EMI interference generated by transmitters, welding devices, SCR driven printers, lightning, etc.	True On Line UPS
7. Frequency Variation 	A change in frequency stability.	Resulting from generator or small co-generation sites being loaded and un-loaded. Frequency variation can cause erratic operation, data loss, system crashes and equipment damage.	True On Line UPS
8. Switching Transient 	Instantaneous under-voltage (notch) in the range of nanoseconds.	Normal duration is shorter than a spike and generally falls in the range of nano-seconds.	True On Line UPS
9. Harmonic Distortion 	Distortion of the normal line waveform, generally transmitted by nonlinear loads.	Switch mode power supplies, variable speed motors and drives, copiers and fax machines are examples of non-linear loads. Can cause communication errors, over heating and hardware damage.	True On Line UPS

*Reference IEEE E-050R & old FIPS PUB 94