

Power Protection Equipment



Surge Protector

Stops power surges; this in-line model also protects telephone connections; attaches to laptop power supply with velcro; multi-voltage; you should get one of these now



Power Strip

Stops power surges and multiplies outlets; they are either 110 or 220; you can get this in-country, if needed



Travel Adapter

Allows your device to plug into the outlet; you can get this in-country



High Voltage Guard

(similar to Fridageguard)

Turns off power if mains are above or below 220; unnecessary if you have a regulator



Step Down Transformer

Converts 220 to 110; the organization will sometimes provide this; do not take one



Step Up/Down Transformer

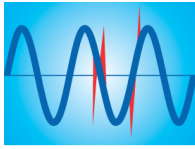
Converts 220 to 110 and converts 110 to 220; usually handles a lighter load than the above model



Voltage Regulator

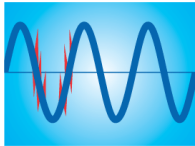
Maintains a constant 220; some regulators include a transformer

Power Problems



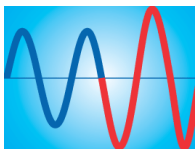
SPIKE / SURGE

Spikes/Surge: Very short, (one millisecond) event of very high surge in voltage to thousands of volts and amps. Spikes are common in all parts of the world and repeated exposure to spikes will damage electronic equipment and corrupt data. What causes it? Switching on/off of nearby equipment, lightning, motors starting etc.



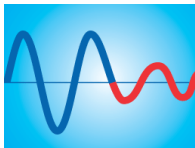
RFI

RFI (Radio Frequency Interference)/Noise: High frequency disturbances that occur within a short period of time (milliseconds). RFI & noise are very common in all parts of the world and are the main cause of data corruption. What causes it? Generated by high frequency noise from nearby equipment like TV, radio equipment, transmitters, mobile phones, switching on/off of certain loads, fluorescent lights, motor speed controls, light dimmers.



OVER VOLTAGE

Over-Voltage: Long duration (milliseconds, seconds, minutes, hours or days) rise in the voltage above acceptable limits. Depending on the level of the over-voltage, the damage can be instantaneous, severe and irreparable. What causes it? On return of mains supply after power cuts, under-sized utility oscillating between periods of brown-outs and over-voltage or accidental (e.g. accidental connection between two phases).



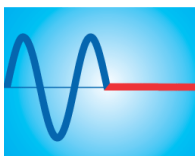
BROWN OUT

Brown-Out: Long duration of low voltage (milliseconds to seconds, minutes, hours or days). Very common in parts of the world especially where the power utilities are over-stretched. Prolonged and frequent brownouts cause the equipment to malfunction or not work at all. Repeated episodes are certain to cause damage. Motors and compressors (and therefore fridges, freezers, coolers, air-conditioners and pumps) are especially at risk. In time, damage is certain. What causes it? Most commonly an over-stretched utility, especially in areas of poor power distribution infra-structure and remote areas. Common in dry seasons where water is used for electricity generation.



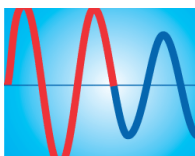
LIGHTNING

Lightning: Direct or nearby strikes can cause minor problems or severe disturbances and damage. Lightning produces spikes/surges, over-voltage or power cuts. What causes it? The surge is generated by either a direct hit, or indirectly striking underground or overhead lines and transmitting high surges to connected equipment in nearby buildings.



POWER CUT

Power-cuts: Common in every country in the world, especially in areas of frequent voltage problems. Sudden loss of power can cause damage ranging from corruption of data to mechanical faults as equipment is stopped while in operation. What causes it? Power or sub station failure, breakdown in the distribution network, or simply a plug being pulled out accidentally.



POWER -BACK SURGES

Power-Back Surges: These typically occur when power returns after a power-cut and connected equipment receives a surge of electricity at an over-voltage level, which can be very damaging (see above). What causes it? Power back surges are created by the utility, when it restores supply at an above normal voltage in order to compensate for the demand as connected equipment re-starts simultaneously.



TELECOM SURGES

Telecom surges, spikes and lightning: Short term, high voltage and current phenomena occurring on the telephone lines. Can cause irreparable damage to any piece of equipment connected to the incoming line. The telephone line itself may even be damaged or destroyed in severe cases. What causes it? Telecom spikes are caused by lightning striking either the telephone line directly or an object near it.

(This page from Sollatek website)