

DISTURBANCE GENERATORS

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Modern electronic equipment is sensitive to short term supply voltage variations like sags, surges, dropouts and very high speed high voltage impulses or transients with durations of few A.C. cycles to very short periods in microsecond range. These power fluctuations will create errors in electronic functions as well as hardware faults and often result a considerable lost time in computer or other electronic equipment. Hence users of these equipment have to use Voltage Regulators, Uninterruptible Power Systems (UPS) etc. to protect their equipment and its service. Disturbance Generators were designed and fabricated as a means of testing these Regulators, UPS's and other protectors. This paper covers the design of Drop-out and Sag/Surge Generators.

A Drop-out generator causes a loss of part or complete half cycle of a A.C. mains voltage. This is achieved by passing the A.C. mains voltage through a switching device like a triac and switching it off precisely for the required duration starting at zero voltage point.

A voltage sag is a reduction of voltage over a few cycles, generally from 2 to 500 ms. A voltage surge is an increase of voltage over a few cycles generally from 2 to 100 ms. The sag/surge generator is capable of decreasing/increasing the supply voltage for a predetermined amplitude over the period required. This is achieved by the A.C. mains voltage passing to the Equipment Under Test being decreased/increased by switching devices controlled by an electronic circuit.

Some of the existing systems according to the level of sophistication can generate a single disturbance ranging from one to several steps of step varying voltages for durations of half to several cycles.

The designed equipment is capable of generating a disturbance as a single step for durations of half to several cycles for a continuous variation of voltage level, employing a simple design at a low cost.