

All light fittings with discharge lamps, mercury vapour/ sodium vapour, fluorescent tubes, etc. shall incorporate capacitors to obtain a power factor of 0.9 or above lagging, guidelines on requirement of PF improvement are also given in section 8 of this regulation.

1.10 UNDER VOLTAGE (UV) RELAY WITH AUTO-RESET TIMER

All air-conditioners or air-conditioning units/ plants/ equipment installed within the consumer installation shall be provided with UV relay with auto - reset timer. The guidelines on requirements of UV relays are also given under section 8 of this regulations.

1.11 HARMONICS AND RAPID VOLTAGE CHANGES

Harmonics refers to the amount of distortion that occurs to the voltage or current sine wave and is commonly referred to as electrical noise. In the electrical installation, this can be caused by various sources such as non-linear loads, Variable Speed Drives, Variable Frequency Drives, Capacitor banks, UPS back-up power supplies, fluorescent light ballasts, fan speed controls, halogen lights, low voltage transformers for indoor/outdoor lighting, unfiltered dimmer switches, A/C-D/C power supplies etc. found in various electronic devices such as computers, printers, fax machines, televisions, etc.

A consumer's load is not allowed to cause deviations of the voltage characteristics other than those allowed in BS EN 50160, IEC 61000 and ENA Engineering Recommendation G5/4-1.

The onsite measurements to determine compliance with the harmonics limits (also refer section 8.1.11) and any excess deviations shall be compensated by the consumer at his cost. The following characteristics of a supply voltage shall be taken in to account:

- Power frequency
- Magnitude of the supply voltage
- Supply voltage variations
- Rapid voltage changes and flickers
- Supply voltage dips
- Short interruptions of the supply voltage
- Long interruptions of the supply voltage
- Temporary power frequency over voltages
- Transient over voltages
- Supply voltage unbalance
- Harmonic voltage
- Interharmonic voltage
- Mains signalling voltage