

POWER QUALITY TERMS I

Active filter

Any number of sophisticated power electronic devices for eliminating harmonic distortion.

CBEMA Curve

A set of curves representing the withstand capabilities of computers in terms of the magnitude and duration of the voltage disturbance. Developed by the Computer Business Equipment Manufacturers Association (CBEMA). CBEMA has been replaced by the Information Technology Industry Council (ITI), and a new curve has been developed that is commonly referred to as the ITI curve.

Common Mode Voltage

The noise voltage that appears equally from current carrying conductor to ground.

Coupling

A circuit element, or elements, or a network that may be considered common to the input mesh and the output mesh and through which energy may be transferred from one to another.

Crest Factor

A value reported by many power quality monitoring instruments representing the ratio of the crest value of the measured waveform to the root mean square of the fundamental. For example, the crest factor of a sinusoidal wave is 1.414.

Critical Load

Devices and equipment whose failure to operate satisfactorily jeopardizes the health or safety of personnel, and/or results in loss of function, financial loss, or damage to property deemed critical by the user.

Differential Mode Voltage

The voltage between any two of a specified set of active conductors.

Distortion

Any deviation from the normal sine wave for an ac quantity.

Distributed Generation (Dg)

Generation dispersed throughout the power system as opposed to large, central station power plants.

Dropout

A loss of equipment operation (discrete data signals) due to noise, sag, or interruption.

Dropout Voltage

The voltage at which a device will release to its de-energized position (for this document, the voltage at which a device fails to operate).

Electromagnetic Compatibility

The ability of a device, equipment, or system to function satisfactorily in its electromagnetic environment without introducing intolerable electromagnetic disturbances to anything in that environment.

Equipment Grounding Conductor

The conductor used to connect the non-current carrying parts of conduits, raceways, and equipment enclosures to the grounded conductor (neutral) and the grounding electrode at the service equipment (main panel) or secondary of a separately derived system (e.g., isolation transformer).

Fault

Generally refers to a short circuit on the power system.

Fault, Transient

A short circuit on the power system usually induced by lightning, tree branches, or animals, which can be cleared by momentarily interrupting the current.

Ferro Resonance

An irregular, often chaotic type of resonance that involves the nonlinear characteristic of iron-core (ferrous) inductors. It is nearly always undesirable when it occurs in the power delivery system, but it is exploited in technologies such as constant-voltage transformers to improve the power quality.

Flicker

An impression of unsteadiness of visual sensation induced by a light stimulus whose luminance or spectral distribution fluctuates with time.

Frequency Deviation

An increase or decrease in the power frequency. The duration of a frequency deviation can be from several cycles to several hours.

Frequency Response

In power quality usage, generally refers to the variation of impedance of the system, or a metering transducer, as a function of frequency.

Ground

A conducting connection, whether intentional or accidental, by which an electric circuit or electrical equipment is connected to the earth, or to some conducting body of relatively large extent that serves in place of the earth.

Ground Electrode

A conductor or group of conductors in intimate contact with the earth for the purpose of providing a connection with the ground.

Harmonic (Component)

A component of order greater than 1 of the Fourier series of a periodic quantity.

Harmonic Content

The quantity obtained by subtracting the fundamental component from an alternating quantity.

Harmonic Distortion

Periodic distortion of the sine wave.

Harmonic Filter

On power systems, a device for filtering one or more harmonics from the power system. Most are passive combinations of inductance, capacitance, and resistance. Newer technologies include active filters that can also address reactive power needs.

Harmonic Number

The integral number given by the ratio of the frequency of a harmonic to the fundamental frequency.

Harmonic Resonance

A condition in which the power system is resonating near one of the major harmonics being produced by nonlinear elements in the system, thus exacerbating the harmonic distortion.

Impulse

A pulse that, for a given application, approximates a unit pulse or a Dirac function. When used in relation to monitoring power quality, it is preferable to use the term impulsive transient in place of impulse.

Impulsive Transient

A sudden, non power frequency change in the steady state condition of voltage or current that is unidirectional in polarity (primarily either positive or negative).

Instantaneous

When used to quantify the duration of a short-duration variation as a modifier, this term refers to a time range from one-half cycle to 30 cycles of the power frequency.

Instantaneous Reclosing

A term commonly applied to reclosing of a utility breaker as quickly as possible after an interrupting fault current. Typical times are 18 to 30 cycles.

Interharmonics (Component)

A frequency component of a periodic quantity that is not an integer multiple of the frequency at which the supply system is designed to operate (e.g., 50 or 60 Hz).

Interruption, Momentary (Electrical Power Systems)

An interruption of a duration limited to the period required to restore service by automatic or supervisory- controlled switching operations or by manual switching at locations where an operator is immediately available.

ITI Curve

A set of curves published by the Information Technology Industry Council (ITI) representing the withstand capabilities of computers connected to 120-V power systems in terms of the magnitude and duration of the voltage disturbance. The ITI curve replaces the curves originally developed by the ITI's predecessor organization, the Computer Business Equipment Manufacturers Association (CBEMA).

Linear Load

An electrical load device that, in steady-state operation, presents essentially constant load impedance to the power source throughout the cycle of applied voltage.

Long-Duration Variation

A variation of the rms value of the voltage from nominal voltage for a time greater than 1 min. usually further described using a modifier indicating the magnitude of a voltage variation (e.g., undervoltage, overvoltage, or voltage interruption).

Noise

Unwanted electrical signals that produce undesirable effects in the circuits of the control systems in which they occur.⁸ (For this document, –control systems is intended to include sensitive electronic equipment in total or in part.)

Nominal Voltage (V_n)

A nominal value assigned to a circuit or system for the purpose of conveniently designating its voltage class (as 208/120, 480/277, 600).

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