Equipment maintenance - 04-A

Measuring application sheet

A&D Company, Limited

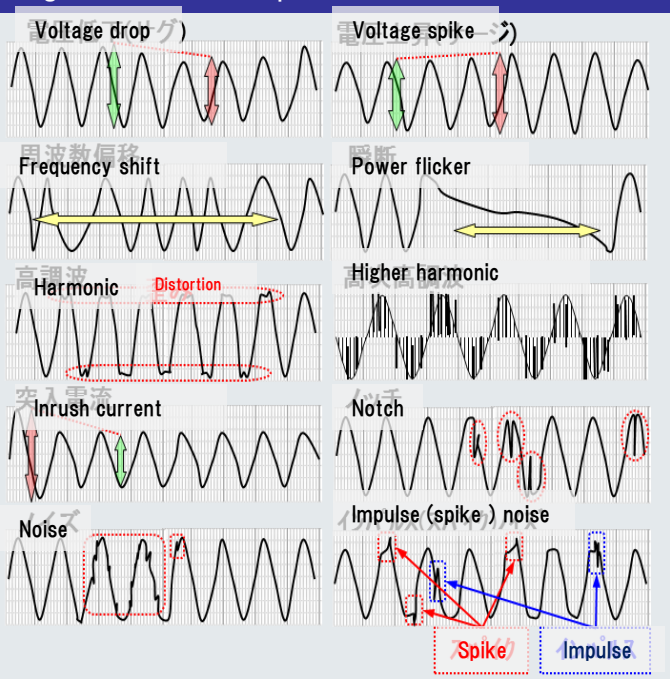
—Power Quality—
Preventing abnormal outages with power quality management

Digital oscillographic recorders provide power quality management and help to determine the cause of abnormal shutdowns of production facilities and IT equipment data corruption

■ Power quality deterioration is linked to data loss on home and office computing devices, abnormal outages of production equipment at factories as well as abnormal outage, operation and heating of electronic devices. It is possible to not only monitor power fluctuations in main power systems (flicker testing and instant monitoring) but also read the abnormalities of various power substation facilities from the waveform with a digital oscillographic recorder.

■ Transformers, motors and power units suffering from poor power quality overheat leading to deterioration in performance of electrical instruments and equipment and in worse cases fires may occur. A digital oscillographic recorder works as measure against these problems.

Image of waveforms of power failures and abnormalities



Type of abnormality	Comments
Voltage sag (drop)	Short term voltage drop by rapid increase of load
Voltage surge (swell)	Short term voltage rise which caused by lightning or open/off of heavy loading electric line
Inrush current	Instant overcurrent which occurs when overloading device starts up. It's a factor of voltage drop.
Frequency shift	Frequency shifts when operation of power head becomes unstable.
Power flicker (instantaneous power failure)	Instantaneous power failure can occur by electric power transmission interruption because of lightning or trip of short circuit breaker.
Notch (Post signal)	Transient electric power interruption
Harmonic, Higher harmonic	Integer multiple frequency component of power supply. A factor of voltage waveform distortion. The waveform of voltage/current is distorted by high-frequency wave noise component which generated by controller device like semi conductor.
Noise	High-frequency wave which overlapped with waveform of power supply (sine wave). It invades a power supply line by disturbing electromagnet
Impulse	Voltage fluctuation of high frequency wave which is overlapped with AC power supply caused by lightning or breaker on/off on the power supply wiring

IEEE Recommended Practice for Monitoring Electrical Power Quality

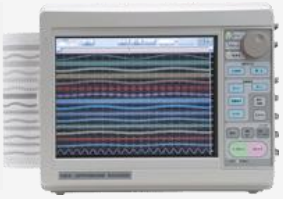
Most unexplained equipment failure, downtime, software corruption or data corruption is due to power failure. To explain power failure precisely the terminology and phenomena must be standardized. The IEEE standard 1159-1995 "IEEE Recommended Practice for Monitoring Electrical Power Quality", has provisions for the standardization of terminology and phenomena for the general classification of power failures, causes, effect on critical load and protection of equipment.

Digital Oscilloscope Recorder

RA2000A Series Omniace III

Did you know?

The RA2300A/RA2800A can simultaneously measure voltage, current, control timing, vibration, rotation, pressure and more directly from sensors.



Amplifier	Model	Specifications
2CH High Resolution Amp.	AP11-101	±100mV to ±500V, A/D res. 16 bit, 10μs
2CH High Speed Amp.	AP11-103	±100mV to ±500V, A/D res. 12 bit, 1μs
Event Amp.	AP11-105	Input: 8 logic (Voltage/Contact)
2CGH TC/DC Amp.	AP11-106A	Input: R, T, J, K, W (±100mV to ±50V)
2CGH AC Strain Amp.	AP11-104A	Response frequency: 2 KHz
2CH DC Strain Amp.	AP11-110	Response frequency: 50 KHz
2CHG Vibration/RMS Amp	AP11-109	±100mV to ±500V
F/V Converter	AP11-108	Input: 1kHz to 10KHz