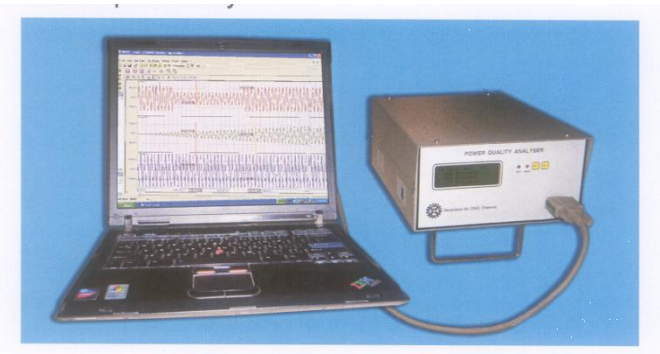
POWER QUALITY ANALYSER (PQA)

Central Scientific Instruments Organisation (CSIO), Chandigarh is a premier national laboratory dedicated to research, design and development of scientific and industrial instruments. During the 1990s, CSIO Chennai Centre was identified for working in the area of Energy Management Instrumentation. CSIO Chennai Centre has successfully completed projects funded by the Ministry of Power, DST and the Indo German Energy Efficiency Program (IGEEP-GTZ). CSIO Chennai Centre also provides Energy Audit, Calibration Services etc. to the industries in the southern region. CSIO Chennai centre developed a low cost power quality analyser based on the state of the art Digital Signal Processors.

A perfect power supply would be one that is always available, always within voltage and frequency tolerances, and has a pure noise free sinusoidal wave shape**.** Naturally, long power interruptions are a problem for all users, but many operations are very sensitive to even very short interruptions, harmonics, transients and unbalance. Voltage sags and power interruptions lasting a few hundredths of a second can be costly. Analysis of power being received is hence very important particularly in industries. Poor quality of power may result in breakdowns and consequent production loss. The industry needs to know its power supply quality by means of a tool, which takes the inputs and quantifies the power quality parameters at an affordable cost. PQA will help to take corrective steps for improving the power quality of the supply, which in turn will reduce the down time and increase the productivity.



Features

- The Power Quality Analyser measures the power quality events like impulse transient, swell, sag, harmonics, phase sequence, unbalance along with basic electrical parameters like voltage, current, power factor, power and energies in a three phase four wire star connected system.
- This PQA can be connected at the incoming line and can also be used as a stand-alone instrument with facility for displaying the PQ parameters in 20 pages.
- The PQA can be connected to a PC to download the data for permanent data storage and analysis via RS 232. This can also be connected to a network using MODBUS-RTU protocol.

Applications

Power quality analyzer is useful in safeguarding the industries such as arc furnaces from penalties by taking appropriate steps. It provides detailed running data including voltage, current, frequency and harmonics. It is also useful for identifying the causes of equipment failures in critical sectors such as health, IT, ceramic/ glass industries etc. Continuous monitoring of the power quality parameters provides valid data for justifying the investment in improving the power quality of the distribution system. The intelligent use of real-time power quality measurement can definitely lead to pre-empting the possibilities of specific industrial breakdowns.

Specification of the system:

Power Quality Events:

Impulse Transient	: Amplitude 425 V Peak Duration 50 μs to 2.5 ms
Sag	: Amplitude (10 to 90% of nominal Value) Duration > 10 ms
Swell	: Amplitude (above 110% of nominal Value) Duration > 10 ms

Harmonics:

No of harmonics measurable	: up to 100th Harmonic
Max Harmonic frequency	: 5 KHz (100*50Hz)
Harmonic Distortion	: Individual and Total Harmonic Distortion in %

Phase Sequence: Positive, Negative & Zero
Detection

Unbalance Ratio: Voltage Ratio in %

Basic Parameters

Voltage	: 300V RMS/ Phase
Current	: 5A RMS / Phase
Power Factor	: ± 1 / Phase
Powers	: Active, Apparent & Reactive Power / Phase
Display	: 4x20 LCD
Keys	: Increment / Decrement keys to select pages.
Serial Interface	: RS232 Connection (MODBUS-RTU protocol)
Power Supply	: 240 V, ±20%, 50Hz

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