

General information

Power Quality Analyzer

- Should be a high-tech device providing its users with a comprehensive feature for measuring, analyzing and recording parameters of 50/60 Hz power networks and power quality in accordance with the Standard IEC 61000-4-30
- The equipment should be portable and capable of field testing
- The equipment should have measurement recording and display facilities and it should be able to record the data with inbuilt auxiliary recorder with display screen for real time analysis
- The CT/PT output should be connected to the equipment without any additional interface
- The equipment must be able to measure and record harmonic current and voltage distortion
- The equipment should be capable of continuously logging all voltage and current waveform on memory of at least 4GB the data shall be stored with suitable data compression technology
- The equipment should have wide bandwidth high sampling rate for accurately capturing waveforms(10.24KHz) at high resolution and fast data storage with modern communication features
- The equipment should be provided with free data analysis software.
- The equipment should have necessary communication interface to collect the data from devices to central processing computer by means of USB.
- The equipment should have Large 7-inch diagonal 800 x 480 resolution touch screen LCD Colour display.

Technical details

Environmental conditions and standard compliances

- The device should work at temperature of -10deg to +50deg
- The device storage temperature range should be of -20deg to +60deg
- The device should work at a humidity of 10-90% with condensation
- Ingress protection: IP51

Input channels

Voltages

- The device should be equipped with five voltage measurement inputs installed as cables terminated with banana plugs marked as L1, L2, L3, N and PE. The range of voltages measured should be 760V.
- The voltage inputs should be sampled at a minimum of 204.8 samples per cycle.
- The power adapter should have a nominal input voltage range 90...760V AC and has separate terminals.
- The voltage measurements should have a measuring input impedance of 13.8M ohms.

- The user should have the option to set the PT ratio and it should be possible to change the ratio and adjust the data accordingly after the data is logged and collected for all the data or for user defined periods.
- The equipment should have a magnetic voltage adaptor used to connect voltage test leads to circuit breaker (type S) and residual current in switchgear.

Currents

- The device should be equipped with four current measurement inputs installed as cables terminated with banana plugs marked as L1, L2, L3 and N. The range of current measured should be 3000A
- The current measurements have a measuring input impedance of 100K ohms.
- The user should have the option to set CT ratio and it shall be possible to change the ratio and adjust the data accordingly after the data is logged and collected for all the data and for the user defined periods

Measurements

- Should measure Voltage and current.
- Should measure Voltage and current crest factors,
- Should measure Power frequency in the 40-70Hz range,
- Should measure Active, reactive and apparent power and energy values, distortion power,
- Should measure Voltage and current harmonic components (up to the 50th),
- Should measure Total harmonic distortion (THD) for current and voltage,
- Should measure a inverter efficiency & Inrush current
- Should measure Active and reactive power values of harmonic components,
- Should measure Angles between voltage and current harmonics,
- Should measure Power factor, Displacement power factor ($\cos\phi$), $\tan\phi$,
- Should measure Unbalance of voltage & current
- Should measure Short-term and long-term flicker Pst and Plt,
- Should measure current event detection including waveforms,

Storage

- It should have 4 Gb memory card

Accuracy of the equipment

- The equipment should provide measurement accuracy in accordance to IEC 61000-4-30 class S.
- The accuracy should remain with IEC 61000-4-30 Class S regardless of the operating condition
- All channels should be sampled simultaneously at the frequency synchronized with the frequency of the power supply voltage in the reference channel

Time synchronization

- The equipment should have provision of time synchronization.

- Time synchronization of the analyzer with UTC is required by IEC 61000-4-30 standard for Class S for marking the measurement data

Lcd display

- The device should have a colour 7" LCD display with a resolution of 800 x 400 pixels and a touch screen facility.

Power quality analysis software

- Comprehensive power quality analysis and management software should be provided
- The software should allow us to select the analyser and set the voltage and current values
- The software should be highly flexible to the user requirements
- The software should be compatible with the windows latest operating system
- The software should have the feature of regular update.
- The free software license should be provided. (minimum 10 users)

Display and reports

- The software should be able to display all parameters in tabular view and graphical trends
- It should be capable to display trend graphs of all rms parameters, harmonics and waveforms, inter harmonics
- It should be capable to display power quality events on a timeline graph, select data for the plot, measurement window for data recording, selecting time period for analysis, selecting data for read out, waveforms in the live mode
- It should have the facility to save the report generated as pdf file, excel or notepad.
- It should provide the user for entering additional data in to the report
- It should provide the measurement report according to EN 50160

Conformity to standards

The analyzer should be designed to meet the requirements of the following standards.

Standards relating to measurement of mains parameters:

- IEC 61326 – Electromagnetic compatibility (EMC). Testing and measurement techniques. Power quality measurement methods,

- IEC 61000-4-7:2009 (ed. 2.1) – Electromagnetic compatibility (EMC) – Testing and Measurement Techniques - General Guide on Harmonics and Interharmonics Measurements and Instrumentation, for Power Supply Systems and Equipment Connected Thereto,

- IEC 61000-4-15:2010 (ed. 2.0) – Electromagnetic compatibility (EMC) – Testing and Measurement Techniques - Flickermeter. Functional and Design Specifications,

- EN 50160:2010 – Voltage characteristics of electricity supplied by public distribution networks.