

Ziegler

Redefine Innovative Metering

Technical Datasheet

ZAM STQA

POWER QUALITY ANALYSER

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ZAM STQA is a compact state of art power quality analyzer designed for utilities, as well as for industrial & commercial customers.

The meter is equipped with 5" TFT Colour display for easy graphical representation of Harmonics, Phasors and Waveforms.

ZAM STQA can continuously monitor power quality in accordance with EN50160, also the built in flexibility allows the user to set customized setting to do power quality analysis.



The meter is capable of measuring harmonics as per IEC 61000-4-7, inter-harmonics, dips, swells, interruptions.

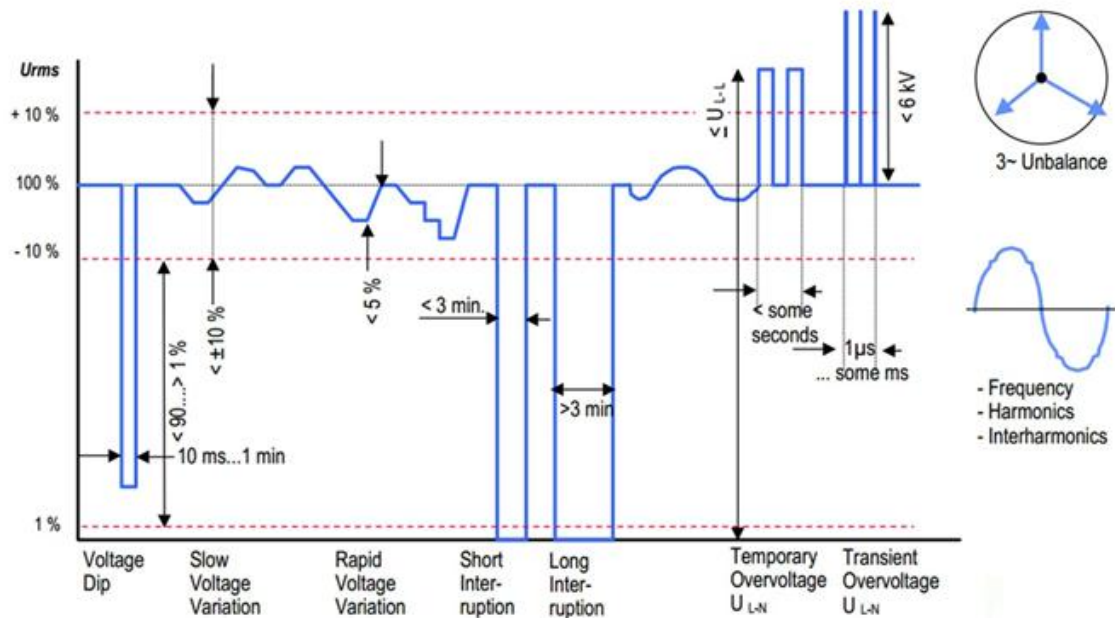
Intelligent algorithm allows user to monitor multiple parameters at a glance on a single screen, which helps in analyzing power quality issues very easily.

The Power Quality Analyzer also monitors demand and measures energy with accuracy of class 0.2S as per IEC 62053-22.

The meter supports memory card (microSD, up to 8GB) for recording of events and power quality parameters as per EN50160. Communication can be done via modbus over RS485.

ZAM STQA is supported with Power Configurator application software for configuring and displaying data via RS 485. USB should be used to download data on PC and for firmware upgrade process.

Understanding EN50160:



ZAM STQA measurement as per EN50160:

- Voltage Swell & Dip Detection.
- Voltage Variation Detection.
- Detection of Voltage Interruptions.
- Unbalance Detection & Measurements.
- Frequency Variation Measurement.
- Per Phase Individual Harmonic Measurement as per IEC 61000-4-7 up to 63rd harmonic, Group and Sub-Group Harmonics Measurement
- Individual, Group and Sub-Group Inter-Harmonics Detection & Measurement.
- Thresholds as per EN50160 or user selectable thresholds.
- %THD of per Phase Voltage & Current.
- Measurement of RMS Value of Harmonics.
- Time Stamping for Power Quality Disturbances.

Product Features

- Measures all basic electrical parameters like Voltage, Current, Power, Demand and Energy.
- Energy Class 0.2S as per IEC 62053-22
- Measurement in all Four Quadrants
- 5" TFT Display with 480x272 pixels resolution



- **Meter:**
 - Basic
 - TRMS Voltage & Current Measurement over 10 cycles for 50Hz and 12 cycles for 60Hz
 - Crest Factor and Earth to Neutral Voltage (EN) Measurement

The screenshot shows the 'Basic' measurement screen. It contains a table with two columns: 'Vrms (V)' and 'Vpeak (V)'. The rows represent different measurement points: L1, L2, L3, and EN. The values are displayed in red, green, and blue respectively. To the right of the table, there are radio buttons for selecting the measurement type: Volt. L-N (selected), Volt. L-L, Current, Crest Factor, and Angle / PF. At the bottom, there are buttons for '<< Previous', 'Parameter', 'Next >>', 'Favourite', and 'Exit'.

	Vrms (V)	Vpeak (V)
L1	230.01	325.29
L2	229.96	325.23
L3	230.00	325.54
EN	0	0

- Distortion
 - % THD & % TID Measurement of per Phase Voltage & Current
 - Shows Voltage and Current amplitudes of 4 user-settable frequencies
 - Signed & Unsigned Power Measurement
- Unbalance
 - Shows %Unbalance of Voltage and Current
 - Shows %Imbalance of Voltage and Current
- System
 - All system related parameters are displayed
 - Shows Minimum and Maximum System Voltage and System current

System		
Voltage (V)	229.99	<input checked="" type="radio"/> Basic
Current (A)	0.9999	<input type="radio"/> System Power
Frequency (Hz)	50.000	<input type="radio"/> Min. / Max.
Voltage THD (%)	0	<input type="radio"/> Arithmetic
Current THD (%)	0	<input type="radio"/> Vector
Phase Sequence	Normal	
<input style="width: 50px;" type="button" value=" << Previous "/> <input style="width: 50px;" type="button" value=" Parameter "/> <input style="width: 50px;" type="button" value=" Next >> "/> <input style="width: 50px;" type="button" value=" Favourite "/> <input style="width: 50px;" type="button" value=" Exit "/>		

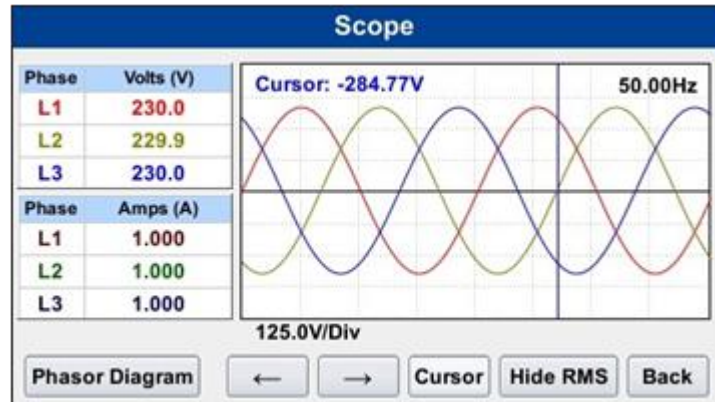
- Power/Energy
 - Active ,Reactive & Apparent Power and Energy Measurement
 - Independent Import & Export Energy Counter
- Demand
 - Active, Reactive, Apparent demand, Current demand measurement
 - User selectable demand interval

Demand		
RMS Current Demand L1	0.4000	<input checked="" type="radio"/> Current Dmd.
RMS Current Demand L2	0.4000	<input type="radio"/> System Dmd.
RMS Current Demand L3	0.3999	<input type="radio"/> Max Demand
RMS Current Demand Avg.	0.4000	<input type="radio"/> Coincid. Dmd.
System Current Demand	1.1999	<input type="radio"/> Coincid. PF
<input style="width: 50px;" type="button" value=" << Previous "/> <input style="width: 50px;" type="button" value=" Parameter "/> <input style="width: 50px;" type="button" value=" Next >> "/> <input style="width: 50px;" type="button" value=" Favourite "/> <input style="width: 50px;" type="button" value=" Exit "/>		

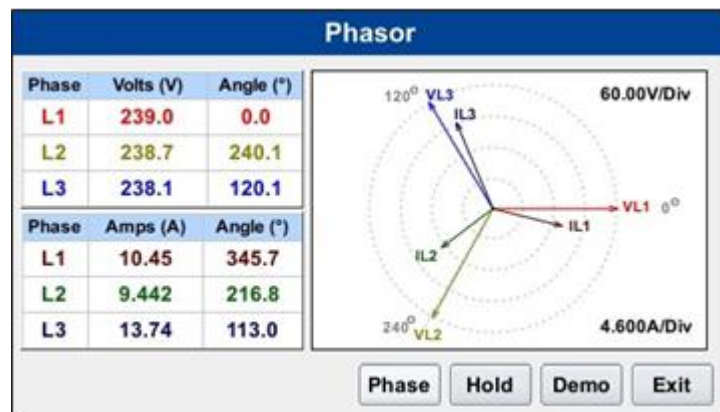
- Favourite
 - Display of parameters readings in large fonts
 - User assignable screens
 - 20 different user settable parameters

Sys Voltage	229.99 V
I RMS LN	0.0011 A
Max Sys Curr	1.9993 A
VAh Tot	0.175 kVAh
1	<input style="width: 40px;" type="button" value=" Prev "/> <input style="width: 40px;" type="button" value=" Next "/> <input style="width: 40px;" type="button" value=" Exit "/>

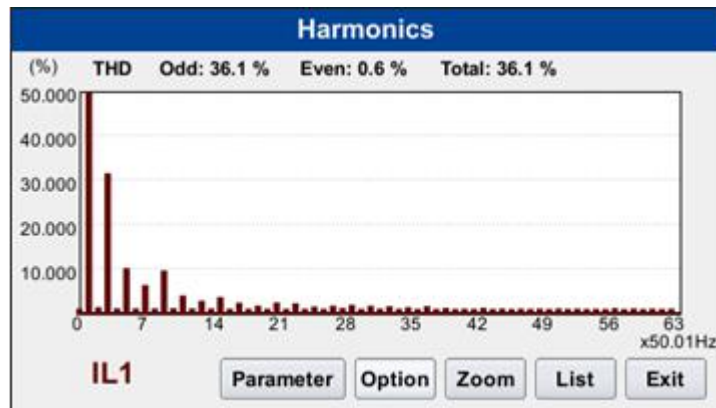
- **Scope:**
 - Real Time Representations of Three Phase Voltage and Current Waveform
 - Cursor for easy analysis
 - User configurable colors for each channel



- **Phasor Diagram**
 - Complete Three Phase System overview at a glance for System analysis (Phasor Diagram)
 - Display of per Phase Vrms & Irms
 - Phase Angle of all Phases
 - User configurable colors for each channel



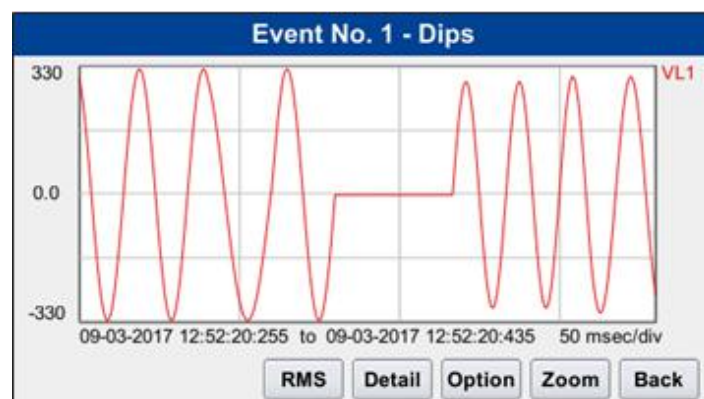
- **Harmonics:**
 - Harmonics measurement as per IEC 61000-4-7 Class II
 - Per Phase Voltage, Current & Power Bar Graph Representation of up to 63rd Harmonic
 - List of Harmonic Components with magnitude & scaled to percentage of fundamental component
 - Inter-Harmonic Component representation
 - Odd, Even, Total THD as well as TID
 - Zoom function for easy analysis of each Harmonic Component



- **Record:**
 - Recording of parameters as per EN50160 or as per user defined thresholds
 - Time Based recording offers automatic start & stop of recording without manual intervention
 - Comprehensive Setup Summary view to display thresholds & setting set for recording
 - Unique recording mode allows user to select recording mode as per user application

The 'Record' screen provides options to start recording, change settings, or view the setup summary. The file name is set to 'repo_027'. Time-based recording is enabled, with a start time of 12/03/2017 14:52:32 and an end time of 12/03/2017 14:54:32.

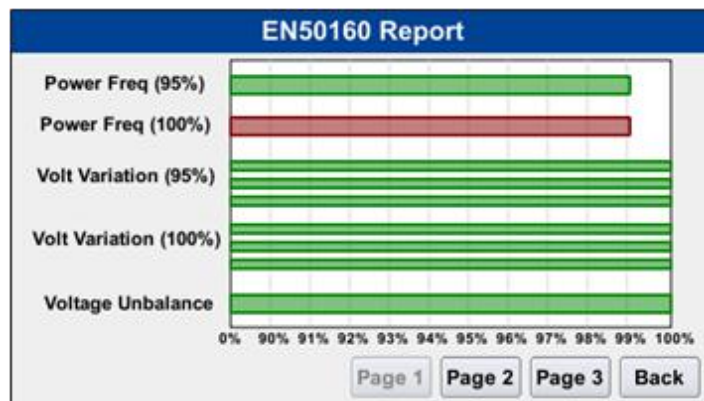
- **Events:**
 - Display & Analysis of recorded events like Dips, Swells & Interruptions
 - Waveform details at each specific Event
 - Display of Rms Values of Voltage & Current at recorded Events



- **Trend:**
 - Graphical Trend Representation of parameters
 - Display of Values with Time Stamp
 - Zoom Function



- **Report:**
 - Automatic Report Generation as per EN50160 thresholds or user defined thresholds
 - Graphical View of EN50160 report for easy analysis
 - User Configurable Status Window
 - Color coded representation of configured parameter to locate the source and pin point root cause of Power Quality disturbance



- **Settings:**
 - System Config is used to select Wiring configuration, CT / PT values & Recording mode as per user need.
 - Event threshold allows user to set thresholds for RMS faults.
 - Trend Parameter, relay, communication setting.
 - Setup Summary give details about ZAM STQA i.e. Model No, Wiring, CT/PT etc



Power Quality Measurement

Parameters	Measurement method	Uncertainty	Measuring range
Power Frequency	1 s and 10 s	± 10 mHZ	42.5 Hz ~ 57.5 Hz / 51 Hz ~ 69 Hz
Magnitude of the supply voltage	10 / 12 cycle	$\pm 0.1\%$ of U_{din}	10 % ~ 150 % of U_{din}
Input Current	10 / 12 cycle	$\pm 0.2\%$ of Nominal	0.1-200% of Nominal
Dips and swells	Urms (1/2)	Amplitude: $\pm 1\%$ of FS Duration: 1 + 1 cycle	duration > 2.5 cycles
Interruptions	Urms (1/2)	Duration: 1 + 1 cycle	duration > 2.5 cycles
Voltage / Current unbalance	10 / 12 cycle	$\pm 0.15\%$	0% - 5% of U_1
Voltage harmonics 1 to 63rd(Harmonics Grouping)	10 / 12 cycle	IEC 61000-4-7 class II $\pm 5\% U_m$ $\pm 0.15\% U_{nom}$	10% ~ 200% of class 3 of IEC 61000-2-4 $U_m \geq 3\% U_{nom}$ $U_m < 3\% U_{nom}$
Current harmonics 1 to 63rd(Harmonics Grouping)	10 / 12 cycle	IEC 61000-4-7 class II $\pm 5\% I_m$ $\pm 0.5\% I_{nom}$	10% ~ 200% of class 3 of IEC 61000-2-4 $I_m \geq 10\% I_{nom}$ $I_m < 10\% I_{nom}$

POWER QUALITY ANALYSER

Voltage interharmonics 1 to 63rd(Interharmonics Grouping)	10 / 12 cycle	±10% Um ±0.30% Unom	10% ~ 200% of class 3 of IEC 61000-2-4 Um ≥ 3% Unom Um < 3% Unom
Current interharmonics 1 to 63rd(Interharmonics Grouping)	10 / 12 cycle	±10% Im ±1.0% Inom	10% ~ 200% of class 3 of IEC 61000-2-4 Im ≥ 10% Inom Im < 10% Inom

Note: Unom / Inom : Nominal Voltage / Current (TRMS), Um / Im : Measured Harmonic Voltage / Current FS : Full Scale = 500 V.

10 cycle for 50 Hz and 12 cycle for 60 Hz. Reference channel for frequency detection is Phase L1. U1 : Positive sequence voltage

Technical Specifications :

Nominal Input Voltage	
Eight Channel Sampling Rate	50kHz Per Channel (for all inputs)
System PT Secondary Values(Udin/Unom)	Line-Neutral - 57.7V to 500V, Line-Line - 100V to 866 V
System PT Primary Values	Line-Neutral - 57.7V to 9999kV On site Programmable, Line-Line - 100V to 9999kV On site Programmable.
Vpeak measuring range	7Vpk to 707.1(L-N)
Vpeak accuracy	±5% of Nominal
Max. Continuous Input Voltage	750V (L-N) ,1.3 kV(L-L)
Overload Withstand (1 sec.)	2x rated value, repeated 10 times at 10 secs. Intervals
Crest Factor	2.12 at Nominal
Nominal Input Current	
System CT Primary Values	1A to 9999A On site Programmable.
Starting Current	1mA for 1A, 5mA for 5A
Apeak measuring range	0.0014 Ipk to 14.14 Ipk
Apeak accuracy	±5% of Nominal
Overload Withstand (1 sec.)	20x of Nom. value(1 sec), repeated 5 times at 5 min interval

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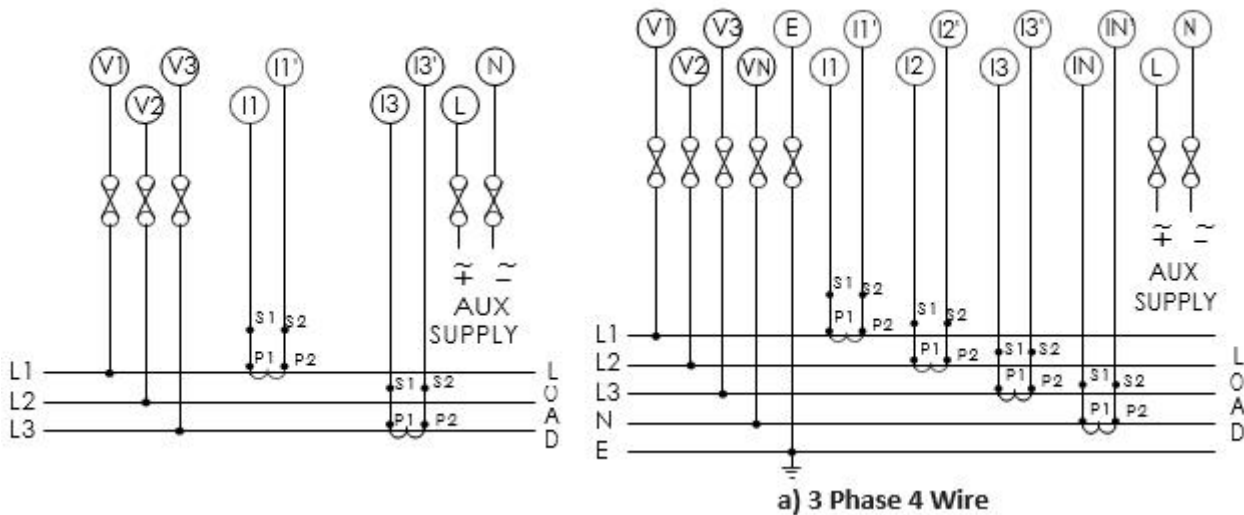
Crest Factor	2.8 at Nominal
Power: (Ref. condition relative to measurand as per IEC 60688)	
Active (W)	±0.2% of Nominal
Apparent (VA)	±0.2% of Nominal
Reactive (VAr)	±1% of Nominal
Power Factor	1°
Energy	
kWh	Class 0.2S As Per IEC 62053-22
kVAh	Class 2 As Per IEC 62053-23
kVAh	0.2
Auxillary Supply	
External Aux	85-265 AC-DC
Aux Supply Frequency	50 / 60Hz (±10%)
VA Burden	
Nominal Input Voltage Burden	< 0.2 VA approx. per phase
Nominal Input Current Burden	< 0.2 VA approx. per phase
Axillary Supply Burden	< 15 VA approx.
Applicable Standards	
Power Quality	IEC 61000 4-7 Class II, EN50160
EMC	IEC 61326-1
Immunity	IEC 61000-4-3. 10V/m min – Level 3 Industrial Low Level
Safety	IEC 61010-1-2010, Permanently connected use
IP for water & dust	IEC 60529
Environmental Conditions, Other information:	
Operating temperature	-20 to +70°C
Storage temperature	-40 to +85°C
Relative humidity	0.95% non condensing
Temperature Coefficient	0.05%/°C
Enclosure	Front : IP54 & Back : IP20
Shock	15g in 3 planes
Vibration	10...150.....10 Hz, 0.15mm Amplitude
Pollution degree	2
Installation category:	CAT III - 300V
High Voltage Test	3.0 kV AC (1 minute between all electrical circuits)
Real Time Clock (RTC) uncertainty:	±1 Sec/Day (23°C ± 1°C) (Trimable through display or Modbus)
Display Update Rate	
Response time to step input	1 sec approx.
Interfaces	
Impulse Led	At front of the instrument.
Relay Output	Configured as limit.
Load Capacity	240 V AC ,5 A
Contact	Change over contact, bistable
ModBus / RTU	RS485, max. 1200m Baud rate : 9.6k,19.2k,38.4k,57k,115.2k bps
USB	At front side of instrument

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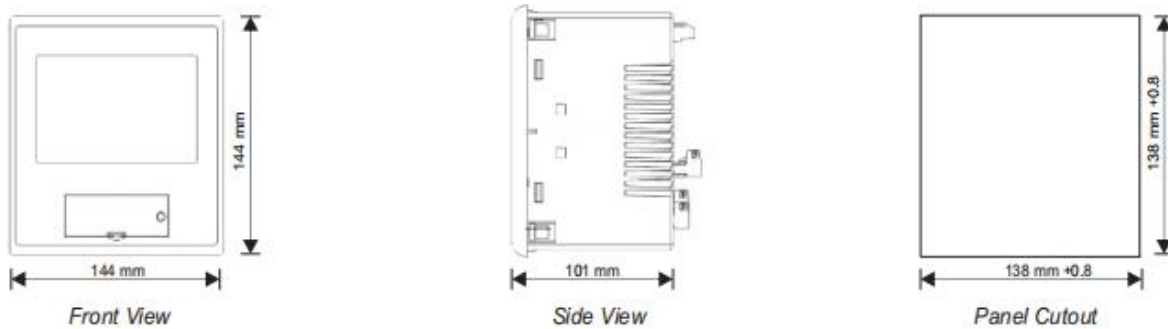
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SD card interface	MicroSD Up to 8 GB (Maximum event recorded per file is 4000)
Overload Indication	
Voltage	>760 V L-N
Current	>205 % of CT Secondary

Connection Diagram and Installation



Dimensions



Ordering Information

Ordering Information	(*)
ZAM STQA with USB, Modbus	

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Ziegler Instrumentation UK Ltd.

Central Buildings, Woodland close old woods Trading Estate, Torquay Devon, TQ2 7BB, United Kingdom

+441803 616 800 | info@ziegler-instrument.com | ziegler-instrument.com