

# Power Quality Analyzer



SA2100 / 2100E



## Brief Introduction

SA2100 Power Quality Analyzer is the professional portable device to measure and analyze the power system quality, supply the harmonics analysis and power quality data analysis, also provide big memory for the data storage, which is used to make the long term logger measuring to power system. The PC software can simply upload the data to PC for full analysis.

## Selection Guide

Model	SA2100	SA2100E
<i>Volts/Amps/Hertz</i>	●	●
<i>Dips&amp;Swell</i>	●	●
<i>Power/Energy</i>	●	●
<i>Unbalance</i>	●	●
<i>Monitor</i>	●	●
<i>Scope</i>	●	●
<i>Harmonic</i>	●	●
<i>Inter-Harmoni</i>	●	●
<i>Transient Voltage</i>	●	●
<i>Inrush Current</i>	●	●
<i>Fliker</i>	●	●
<i>Interruption</i>	●	●
<i>400Hz</i>	●	●
<i>Memory card</i>	8GB	8GB
<i>Standard CT</i>	Flexi. CT PY-3000A*4pcs	Flexi. CT PY-3000A*3pcs

USB High Speed Transfer

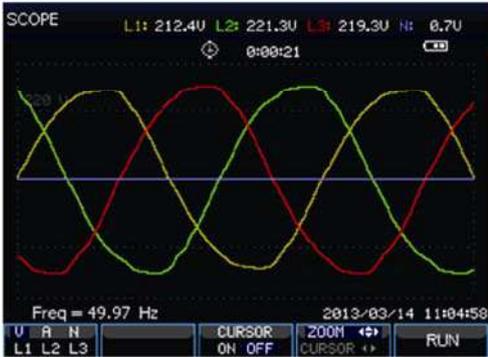


Isolated Interface to ensure safe operation





## Measurement Modes



### 1 Scope

View the voltage/current waveform and readings. Cursor Zoom function

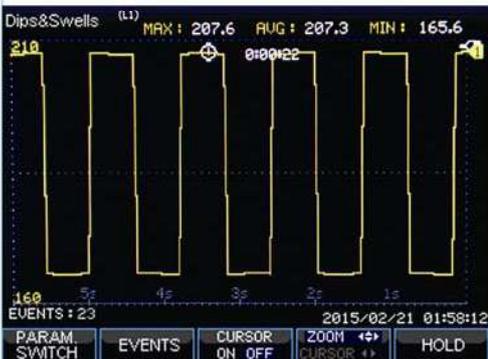
### Voltage/Current/Frequency 2

Measure Voltage/Current/Frequency and Crest Factor

Volts/Amps/Hz

	L1	L2	L3	N
Urms	238.7	238.7	238.7	4.842
Upk	315.2	315.2	315.2	8.518
CF	1.32	1.32	1.32	1.76
Irms	43.60	6.335	6.346	0.814
Ipk	60.33	7.630	7.901	1.113
CF	1.38	1.20	1.25	1.37

Freq = 50.00 Hz

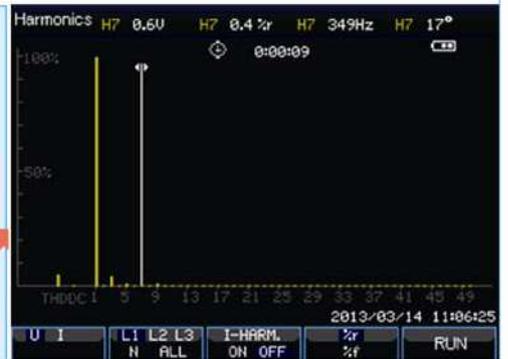


### 3 Dips & Swells

Capture the abnormal Event, such as Swells, Dips, Interruptions and Rapid Voltage Change

### Harmonics 4

Harmonics and interharmonics measurement up to the 50th, parameter DC Component, THD, K-factor



Power & Energy

	L1	L2	L3	Total
P(kW)	3.311	1.472	1.482	6.265
S(kVA)	10.39	1.501	1.500	13.39
Q(kVAR)	9.845	0.293	0.234	10.37
TPF	0.32	0.98	0.99	0.47
KWh	0.048	0.037	0.038	0.123
KVAh	0.262	0.038	0.038	0.338
KVARh	0.248	0.008	0.006	0.000

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### 5 Power and Energy

Full power parameters measurement including Vrms/Arms/KW/KVA/KVAR/TPF/DPF and Energy data KWh/kVAh/kVARh

### Flicker 6

Support measure the parameters Pst (<10 min), Plt (<2 hrs), also Pst(1 min) for quick feedback and Instant flicker Pinst in trend

Flicker

	L1	L2	L3
Pst(1min)	0.00	0.00	0.00
Pst	0.00	0.00	0.00
Plt	0.00	0.00	0.00

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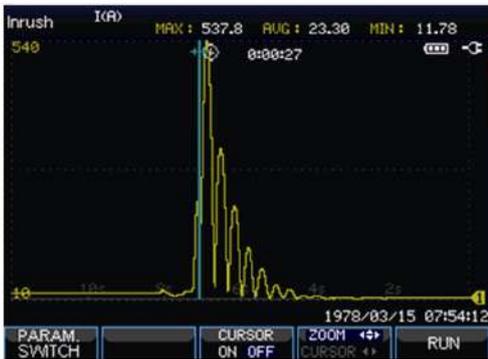
### 7 Unbalance

Check the unbalance in 3 phases based on IEC61000-4-30 standards

### Transients 8

Capture waveforms at high-resolution during a variety of disturbances, maximum 100 events, sample rate 20Ks/s





**9 Inrush Current**  
 Capture the surge currents that occur in a large or low-impedance load comes on line.

**10 Logger**  
 Record the measuring data as selectable parameters and interval, duration. The saved data in TF card, which can be download to PC by USB and check by Power View Software.

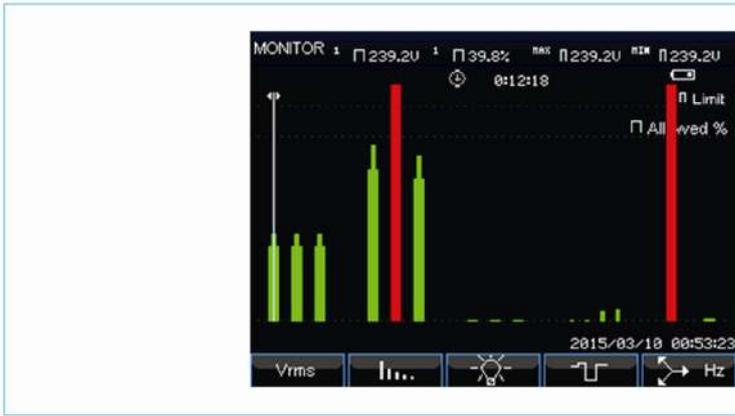
**Logger**

Memory Available 7.72 G  
 Interval 1 s  
 DURATION 2 h  
 Save as: **Logger 1**

Immediate  
 Timed

Year 2015  
 Month 3  
 Day 10  
 Hours 0  
 Minutes 42

PARAM SWITCH Param Select START



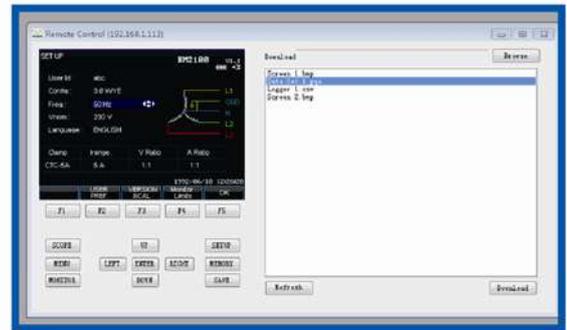
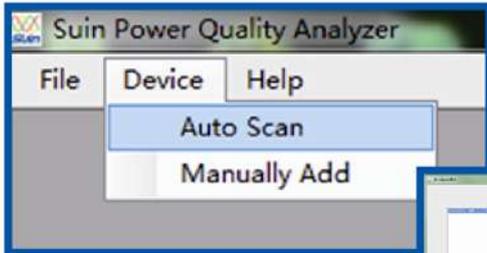
**11 Monitor**  
 Measure all the parameter Vrms, Arms, Harmonics, Flicker, Dip, Swell, Rapid Voltage Change, Interruption, Unbalance, frequency at the same time, check whether meet the requirements limited by users or default standards EN50160. The monitoring time lasts from 2 hours to 7 days.

### Suin Power View Software

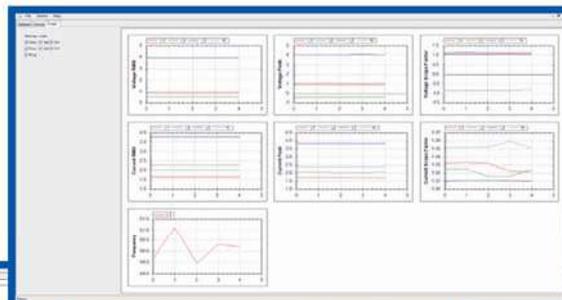
Power View is easy operation software to make the remote control to Analyzer and view the download data.

AUTO Scan the device connected to PC through LAN Interface

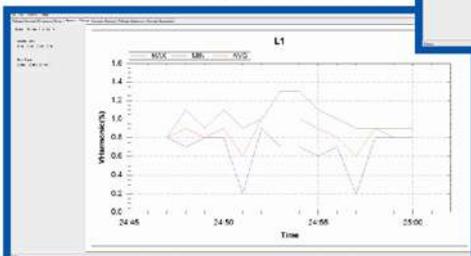
Remote Control Interface



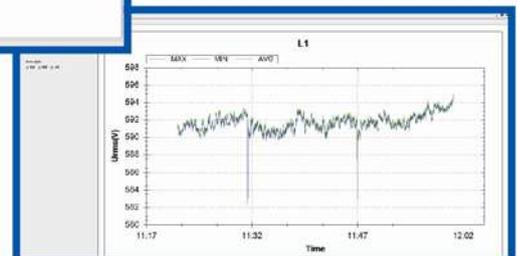
Monitor the user-demanded parameters



Visual view of data trend (Max, Min, Average)



Visual view of data trend (Max, Min, Average)





## Input

Voltage Input	
Input Channels	4 (3 phase + neutral) DC coupling
Max. Input Voltage	1000Vrms
Range of nominal voltage	50 to 500V
Max pulse peak voltage	6kV
Bandwidth	>3kHz
Input Impedance	4MΩ/5pF

Current Input	
Numbers of Input	4 (3 phase + neutral) DC coupling
Type	Clamp Current Sensor with mV output
Input Range	1 to 3000Arms with supplied current clamp
Input Impedance	50kΩ
Bandwidth	>3kHz

Sampling System	
Resolution	8 channels 16 bits AD
Sampling Rate	20kS/s for each channel, 8 channels sample synchronously
RMS Sampling	5000 points for 10/12 cycles (according to IEC 61000-4-30)
PLL Sync	4096 points for 10/12 cycles (according to IEC61000-4-7)

Measurement	Measurement Range	Resolution	Accuracy
<b>Voltage/Current/Frequency</b>			
Vrms(AC+DC)	1 ~ 1000Vrms	0.1Vrms	±0.5% of nominal voltage
Vpk	1 ~ 1400Vpk	0.1Vpk	±0.5% of nominal voltage
V(Crest Factor)	1.0 ~ >2.8	0.01	±5%
Arms (AC)	10mV/A	0~ 100A	±0.5% ± 0.2A
	1mV/A	1~ 1000A	±0.5% ± 0.2A
	50mV(65mV)/1000A	15~ 5000A	±1% ± 2A
A(Crest Factor)	1 ~ 10	0.01	±5%
Frequency	42.5 ~ 57.5Hz (50Hz nominal)	0.01Hz	±0.01Hz
	51 ~ 69Hz (60Hz nominal)	0.01Hz	±0.01Hz
	340 ~ 460Hz (400Hz nominal)	0.01Hz	±0.1Hz

Dips & Swells			
Vrms1/2	0 ~ 200% of nominal voltage	0.1Vrms	±1%
Arms1/2	1 ~ 3000A	1A	±1% ±2A
Threshold levels	Threshold is settable according to nominal voltage percentage Detectable events type: Dips, Swells, Interruption, Voltage Rapid Change		
Duration	hour-minute-second-microsecond	0.5 cycle	1 cycle

Harmonic			
Harmonic Number	1 ~ 50		
Inter-Harmonic (SA2100)	1 ~ 49		
Harmonic Voltage	0.0 ~ 100.0%	0.1%	±0.1% ± nx0.1%
Harmonic Current	0.0 ~ 100.0%	0.1%	±0.1% ± nx0.1%
THD	0.0 ~ 100.0%	0.1%	±2.5%
DC Relative	0.0 ~ 100.0%	0.1%	±0.2%
Frequency	0 ~ 3500Hz	1Hz	1Hz
Phase	-360° ~ 0°	1°	± nx1.5°

Power and Energy			
Active Power/Apparent Power/Reactive Power	1.0 ~ 20.00MW	0.1kW	±1.5±10 counts
KWh	0.00kWh ~ 200GWh	10Wh	±1.5±10 counts
Power Factor	0 ~ 1	0.01	±0.03

Flicker (SA2100)			
Pst(1min),Pst,Plt,PF5	0.00 ~ 20.00	0.01	±5%

Unbalance			
Voltage	0.0 ~ 5.0%	0.1%	±0.5%
Current	0.0 ~ 20.0%	0.1%	±1%
Voltage Phase	-360° ~ 0°	1°	±2counts
Current Phase	-360° ~ 0°	1°	±5counts

Voltage Transient (SA2100)			
Vpk	6000Vpk	1V	±15%
Vrms	10 ~ 1000Vrms	1V	±2.5%
Min. Test Time	50us		
Sampling Rate	20kS/s		



■ **Measurement**

	Measurement Range	Resolution	Accuracy
<b>Inrush Current (SA2100)</b>			
Arms(AC+DC)	0~3000Arms	0.1	±1% ± 5counts
Inrush Duration	6s ~ 32min selectable	10ms	±20ms
<b>Logger</b>			
Recording	user-defined parameters for 4 phases at the same time		
Memory	Data stored in TF card, 8GB		
Duration Time	2 hrs to 1 year		
Interval	1s to 1 hrs		

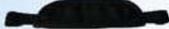
■ **Wire Combinations**

1Ø+NEUTRAL	Single phase with neutral
1Ø SPLIT PHASE	Split phase
1Ø IT NO NEUTRAL	Single phase system with two phase voltages without neutral
3Ø WYE	3-phase 4-wire system, Y type
3Ø DELTA	3-phase 3-wire system delta (Delta)
3Ø IT	3-phase Y type without neutral
3Ø HIGH LEG	4-wire 3-phase delta system (Delta) with center tapped high leg
3Ø OPEN LEG	Open-delta (Delta) 3-wire system with two transformer windings
2-ELEMENT	3-phase 3-wire system without current sensor on phase L2/B (2 Watt meter method)
2 1/2-ELEMENT	3-phase 4-wire system without voltage sensor on phase L2/B

■ **General Characteristics**

<b>Display</b>	
Screen	Color TFT LCD
Size	5.6 inch
Resolution	320×240
Brightness	Ajustable
<b>Interface</b>	
USB Host	Download file to PC by U disk for analyze with PC software
LAN	For remote control of the Analyzer and measurement data transmission.
<b>Memory</b>	
Flash Memory	128MB
TF Card	Standard 8G
<b>Mechanical</b>	
Dimension	262× 173 × 66mm
Weight	1.6kg
<b>Environment</b>	
Working temperature	0°C~ 40°C
Storage temperature	-20°C~ 60°C
Humidity	90% relative humidity
<b>Power</b>	
Adapter input	90~264V
Adapter output	12V 2A
Battery	Rechargeable NI-MH 7.2V 3.8Ah
Battery Working Time	> 7 hours
Battery Charge Time	6 hours
<b>Standard</b>	
Measurement Method	IEC61000-4-30 Class-S
Measurement Performance	IEC61000-4-30 Class-S
Power Quality Monitoring	EN50160
Flicker	IEC61000-4-15
Harmonic	IEC61000-4-7
<b>Electrical Safety</b>	
Comply with	IEC61010-1 ,Safety Degree: 600V CAT IV 1000V CAT III
Max. voltage at Voltage Input	600V CAT IV 1000V CAT III
Max. voltage at Current Input	42Vpk

## Accessories

Voltage Test Leads Alligator Clips		(2m) x 5 pcs	Soft Carry Bag		1 pcs
Power Adapter		1 pcs	Hang Strap		1 pcs
Power Patch Cord		1 pcs	CD (Software, Manuals)		1 pcs

## CT Clamps

Clamp Mode	KLC8C-5A	CTC0080	CTC0130	CTC1535
Appearance				
Measurement Range	5A	50A	100A	1A ~ 1000A
Output Voltage Ratio	10mV/A	10mV/A	1mV/A	1mv/A
Working Frequency	45Hz~55Hz	50Hz~400Hz	50Hz~400Hz	40Hz ~ 100KHz
Accuracy	0.2%	0.2%	0.2%	1%
Safety				CAT III 600V
Clamp Radius	8mm	8mm	13mm	52mm
Dimension(mm)	158 x 43 x 24	171 x 46 x 27	174 x 52 x 27	111 x 216 x 45

Flexible Probes Mode	PY-3000A	PY-5000A
Appearance		
Primary Current Rating	3000A	5000A
Output Voltage Ratio	65mV/1000A	50mV/1000A
Measurement Range	15A~3000A	20A~5000A
Accuracy	±1% + Position Error	±1% + Position Error
Maximum Allowable Input	100KA	100KA
Phase Error	<±1°	<±1°
Noise	<2mVrms (10Hz~10KHz)	<2mVrms (10Hz~10KHz)
Frequency Characteristic	10Hz~10KHz (-3dB)	10Hz~10KHz (-3dB)
Weight	130g	130g
Length	200cm	200cm
CT Perimeter	50cm	50cm
Measurement Position Error	±2%	±2%



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