



NP41

- PORTABLE POWER QUALITY ANALYZER

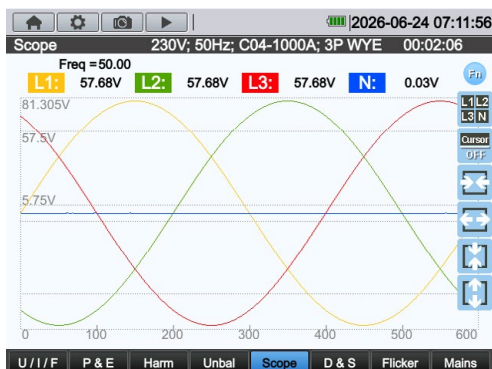
Equipped with a dual DSP+ARM processor architecture and an embedded operating system, the NP41 power quality analyzer delivers rapid data processing and high-volume electrical parameter calculations. Its comprehensive measurement capabilities enable efficient power distribution checks, ensuring swift and convenient evaluation of power grid quality and electrical characteristics. Additionally, the device features a user-friendly keyboard alongside a large, color touchscreen LCD interface.

FEATURES:

- Compliance with international standard IEC61000-4-30 - Class S.
- 5.6" color LCD touch screen with refreshing User Interface.
- Waveform real-time display (4 voltages/4 currents).
- Half cycle RMS measurement (voltage and current).
- Measurement of TRMS currents up to 6000 A (with additional probes mode).
- Measurement in 1-phase and 3-phase systems (3 - and 4-wire).
- Measurement of power, energy, flicker, 3-phase unbalance, inrush current and other.
- Measurement of harmonics and interharmonics up to the 100th (50/60 Hz).
- Graphical presentation of data in a waveform, vector diagram, trend, bargraph, event table.
- Transient capture
- Record of events: dips, swells, voltage rapid change, interruption.
- Power quality according to EN-50160 standard or user-defined limit.
- Archiving of user-defined parameters in the 32GB internal memory.
- Ethernet interface for remote operation of the analyzer.
- USB Host to move archive data and screenshots to an external USB memory.
- Safety standards: EN 61010-1. CAT III 1000V / CAT IV 600V.
- The analyser set: analyzer, voltage tests leads alligator clips (5x), DC power adapter, quickstart user manual



MEASUREMENTS MODES



Scope

1

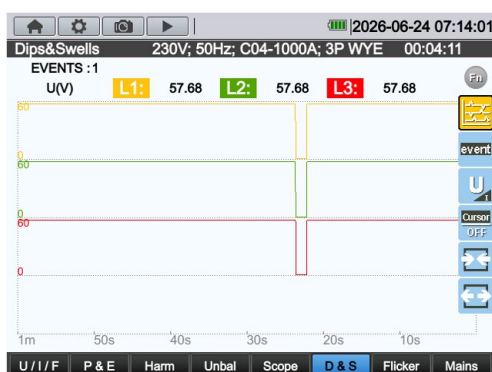
View the voltage/current waveform and readings. Cursor Zoom function.

2 Voltage/Current/Frequency

Measure voltage/current/frequency and crest factor

	L1	L2	L3	N
Urms(V)	49.98	59.98	69.98	0.02
Upk(V)	70.79	84.93	99.01	0.09
CF	1.42	1.42	1.41	4.10

	L1	L2	L3	N
Irms(A)	10.0	30.0	19.9	0.1
Ipk(A)	14.3	42.6	28.4	0.2
CF	1.43	1.42	1.42	2.98



Dips & Swells

3

Capture the abnormal event, such as swells, dips, interruption and rapid voltage change.

4 Harmonics

Harmonics and interharmonics measurement up to the 100th, parameter DC component, THD, K-factor

	L1	L2	L3	N
Uthd	13.377	13.376	13.377	100.000
Udc	0.06	0.07	0.03	100.00
Ithd	62.303	52.291	54.328	100.000
Idc	26.26	29.47	46.26	100.00
Uharm 1	100.000	100.000	100.000	100.000
Uharm 2	11.002	11.003	11.001	100.000
Uharm 3	2.994	2.991	2.996	48.652
Uharm 4	0.003	0.002	0.003	100.000
Uharm 5	6.997	6.994	6.997	63.732

	L1	L2	L3	T
P(kW)	0.50	1.80	1.40	3.69
S(kVA)	0.50	1.80	1.40	3.92
Q1(kvar)	-0.00	-0.01	-0.00	-0.01
PF	1.00	1.00	1.00	0.94
cosΦ	1.00	1.00	1.00	-0.00
tanΦ	-0.00	-0.00	-0.00	-0.00
Urms(V)	49.98	59.98	69.98	
Irms(A)	10.0	30.0	19.9	
E(kWh)	0.005	0.019	0.015	0.040

Power and energy

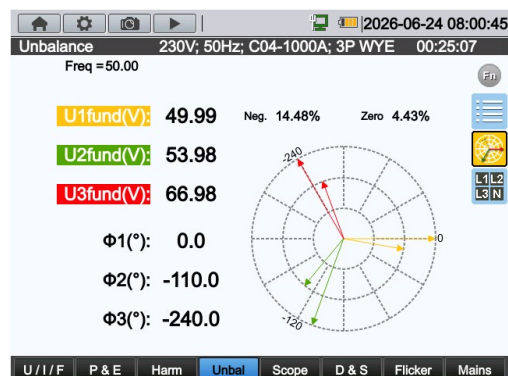
5

Full power parameters measurement including Vrms/Arms/kW/kVA/kVAR/TPF/DPF and energy data kWh/kVAh/kVARh

6 Flicker

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

	L1	L2	L3
Pinst	0.28	0.32	0.28
Pst	1.02	1.02	1.02
Plt	0.00	0.00	0.00



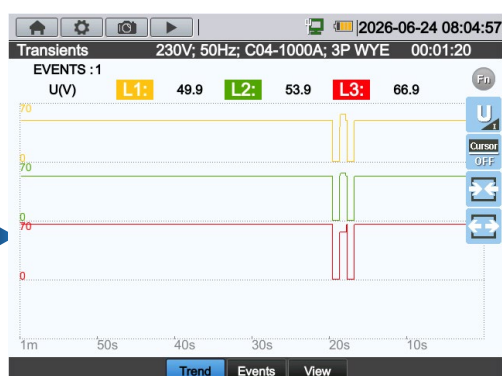
Unbalance

7

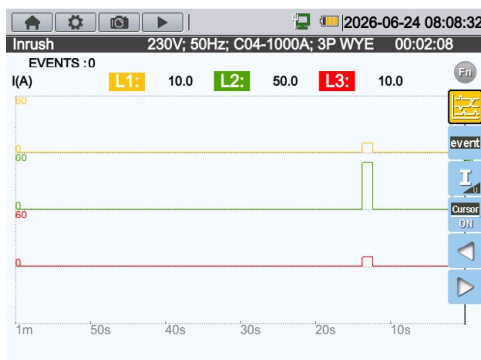
Check the unbalance in 3 phases based on EN 61000-4-30 standard.

8 Transients

Capture waveform at high-resolution during a variety of disturbances, maximum 100 events, sample rate 200 kS/s.



MEASUREMENTS MODES



Inrush current

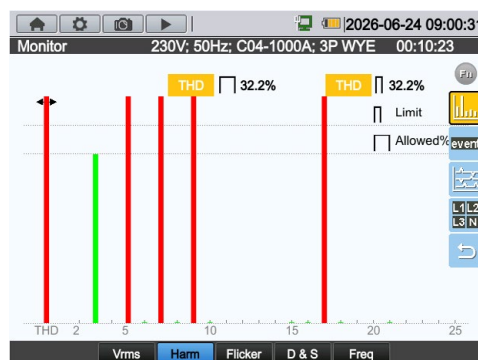
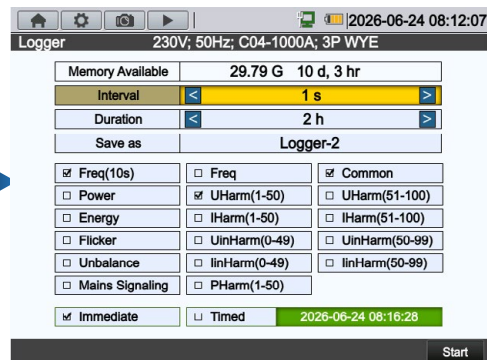
9

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 micro SD card which can be downloaded to PC by USB and check by PQA View software.



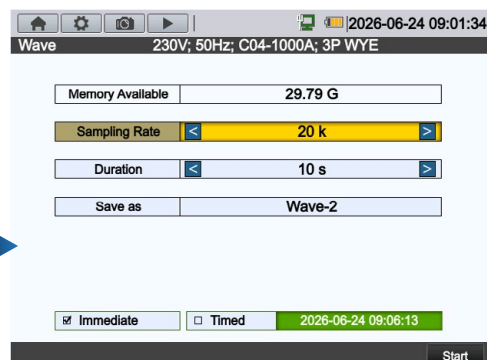
Monitor

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.

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Wave Record

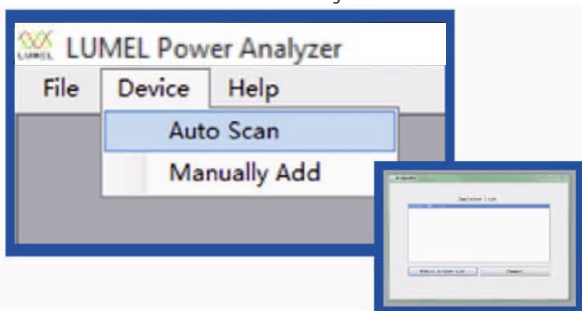
The waveform of voltage and current could be recorded through this function, the sample rate is up to 20 KS/s and the duration time is settable.



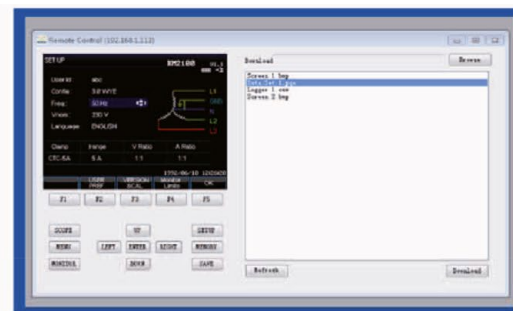
POWER QUALITY ANALYZER SOFTWARE

Power Quality Analyser is easy operation software for remote control to analyzer and view the downloaded data.

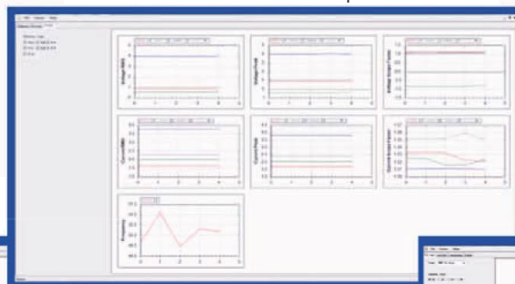
AUTO Scan the device connected to PC through LAN interface



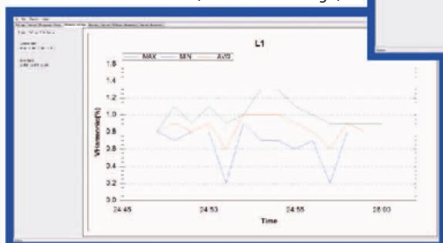
Remote control interface



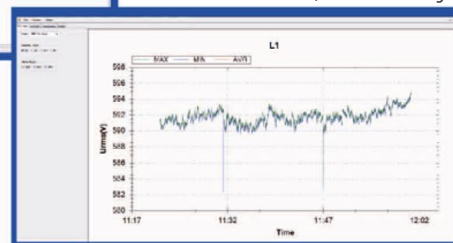
Monitor the user-demanded parameters



Visual view of data trend (max. min. average)



Visual view of data trend (max. min. average)



TECHNICAL DATA

► INPUTS

VOLTAGE INPUTS

Input Channels	4 (3-phase + neutral)
Max. input voltage	1000 Vrms
Range of nominal voltage	Selectable, 1V to 1000V according to EN 61000-4-30
Max pulse peak voltage	6kV
Input impedance	5 MΩ

CURRENT INPUT

Number of input	4 (3-phase+ neutral)
Type	clamp current sensor with mV output
Max input voltage	10V
Input range	depends on the CT clamps: 5A/100A/200A/1000A/1500A/3000A/5000A/6000A
Input Impedance	100 kΩ

SAMPLING SYSTEM

Resolution	16 bits
Sampling rate	200kS/s, 8 channels sample synchronously
RMS sampling	4096 points for 10/12 cycles (according to EN 61000-4-30)
PLL sync	4096 points for 10/12 cycles (according to EN 61000-4-7)

MEASUREMENT

		Measurement range	Resolution	Accuracy
VOLTAGE/CURRENT/FREQUENCY				
Vrms (AC+DC component)		1 ... 120 V rms 120 ... 400 V rms 400 ... 1000 V rms	0.001 V rms 0.01 V rms 0.1 V rms	U _{din} < 100V ± 0.2V U _{din} > 100V ± (U _{din} × 0.2%)
Note: U _{din} : nominal voltage, range 100V ... 690V				
Vpk		1 ... 1400 Vpk	0.01 Vpk	±5% of nominal voltage
V (crest factor))		1.0 > 2.8	0.01	± 5%
Arms (AC)	10mV/A	0 ... 150 A	According to the range of current clamps x current ratio, totally 5 digits	±(0.1% reading + 0.05% range)
	1mV/A	1 ... 2000 A		±(0.1% reading + 0.05% range)
	current clamps	10 ... 6000A		±(0.1% reading + 0.1% range)
A (crest factor)		1 ... 10	0.01	± 5%
Arms1/2		dependent on CT clamps	Ref to Arms	±(0.2% reading + 0.2% range + CT)

Note: Accuracy of using current clamps measurement = accuracy of analyzer + accuracy of current clamps (CT)

For example: measuring 1000 A with 3000A current clamp, the accuracy calculation is as follows:

At the center position, the accuracy is: $\pm (0.1\% \times 1000 + 0.1\% \times 6000 + 1\% \times 1000) = \pm 17 \text{ A}$.

At other positions, the accuracy is: $\pm (0.1\% \times 1000 + 0.1\% \times 6000 + 3\% \times 1000) = \pm 37 \text{ A}$.

Frequency	42.5 ... 57.5 Hz (nominal 50 Hz)	0.01Hz	± 0.01 Hz
	51 ... 69 Hz (nominal 60 Hz)	0.01Hz	± 0.01 Hz
	320 ... 480 (nominal 400 Hz)	0.01 Hz	± 0.01 Hz

DIPS & SWELLS

Vrms1/2	0 ... 200% of nominal voltage	Ref to Vrms	± 0.5 % of nominal value
Threshold value	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 period

► MEASUREMENT

	Measurement range	Resolution	Accuracy
HARMONIC			
Harmonic order	1 ... 100 (50/60 Hz); 1 ... 12 (400 Hz)		
Interharmonic order	0 ... 99 (50/60 Hz)	0.01%	$\pm 0.1\% \pm n \times 0.1\%$
THD	0.0 ... 100.0%	0.01%	$\pm 2.5\%$
Frequency	0 ... 6000 Hz	0.01 Hz	0.1 Hz
Phase	-180° ... 180.0°	0.1°	$\pm n \times 0.1^\circ$ (n represents harmonic order)
Absolute voltage	0 ... 1000V	Ref to Vrms	$\pm 5\%$ reading (harmonics $\geq 1\%$ nominal value) $\pm 0.05\%$ nominal value (harmonics $< 1\%$ nominal value)
Absolute current	According to current clamps	Ref to Arms	$\pm 5\%$ reading (harmonics $\geq 3\%$ nominal value) $\pm 0.05\%$ measurement range (harmonics $< 3\%$ nominal value)
Harmonic power(50/60Hz)	1-50th	1-12th	$\pm (5\% + n \times 2\% + CT)$ (n represents harmonic order)
Harmonic power(400Hz)	1-12th		
K factor	1-50	0.01	$\pm 10\%$ (Irms $\geq 1\%$ current range)
POWER & ENERGY			
Active power P (kW), apparent power S (kVA), reactive power Q (kvar)	depends on clamp and nominal voltage	Min 0.01 kW	$\pm (1\% \pm 10 \text{ counts} + CT)$
kWh, kVAh, kvarh	clamp and nominal voltage		$\pm (1\% \pm 10 \text{ counts} + CT)$
Power factor*	0 ... 1	0.01	$\pm 0.01 \%$
Cosφ**	0 ... 1	0.01	$\pm 0.01 \%$
* - result of dividing active power by apparent power ** - displacement power factor; the cosine value of angle between fundamental voltage and current.			
FLICKER (50/60 Hz)			
Pst (10 minutes) Plt (2 hours)	0.00 ... 20.00	0.01	$\pm 5\%$
UNBALANCE			
Voltage	0.00 ... 30.00%	0.01%	$\pm 0.1\%$
Current	0.00 ... 30.00%	0.01%	$\pm 1\%$
Voltage phase	-360° ... 0°	0.1°	$\pm 0.1^\circ$
Current phase	-360° ... 0°	0.1°	$\pm 0.5^\circ$
VOLTAGE TRANSIENT			
Vpk	$\pm 6000 \text{ Vpk}$	0.01 V	$\pm 15\%$
Vrms	10 ... 1000Vrms	0.01 V	$\pm 2.5\%$
Min. Test Time	5 μs		
Sampling rate	200 kS/s		
INRUSH CURRENT			
Arms	depending on CT clamps	Ref to Arms	$\pm (1\% \pm CT)$
Inrush duration time	1s ... 32min settable	10 ms	$\pm 20 \text{ ms}$
MAINS SIGNALING			
Threshold level	Threshold value, limit value and Signaling lasting time can be programmed according to the two signaling frequency.		
Signaling frequency	60 ... 3000 Hz	0.1 Hz	
Relative V%	0% ... 100%	0.1%	$\pm 0.4\%$
Absolute V3s (3s average)	0.0 ... 1000 V	0.1 V	$\pm 5\%$ Nominal voltage
DATA LOGGER			
Memory	data stored in micro SD card, 32GB		
Duration time	2 hours to 1 year; depends on the recording items and time interval		
Interval	1s to 1 hour		

► GENERAL CHARACTERISTICS

DISPLAY	
Screen	color LCD touch screen
Size	5.6"
Resolution	640 x 480 pixels
Brighthness	adjustable
HOUSING	
Protection	protection shield. strong
IP	IP53 acc. to EN 60529
INTERFACE	
USB Host	Download file to PC from flash disk to analyze with PC software.
LAN	For remote control of the analyzer and measurement data transmission.
MEMORY	
FLASH memory	1GB
Micro SD	32GB
MECHANICAL	
Dimension	200 x 270 x 68 mm
Weight	2 kg
ENVIROMENT	
Working temperature	0°C ... 45°C
Storage temperature	-10°C ... 45°C
Humidity	90% relative humidity
POWER SUPPLY	
Adapter input	100...240 V a.c. (50/60 Hz)
Adapter output	12 V d.c. 2 A
Battery	7.4V 5200mAh
Battery working time	> 8 hours
Battery charge time	< 6 hours
STANDARDS	
Measurement method	EN 61000-4-30 Class-S
Measurement performance	EN 61000-4-30 Class-S
Power quality monitoring	EN 50160
Flicker	EN 61000-4-15
Harmonic	EN 61000-4-7
Power measurement method	IEEE1459
ELECTRICAL SAFETY	
Comply with standards	EN 61010-1; Pollution Degree 2
Max. voltage at voltage input	600V CAT IV. 1000V CAT III
Max. voltage at current input	10V

► ANALYZER SET

Voltage tests leads along with alligator clips	length 2m. 5 pcs
Power adapter DC	1 pc
Power cord	1 pc
Soft carry bag	1 pc
Hang strap	1 pc
U disk (PC software + manual)	1 pc
Measurement guide	1 pc
Sticker of input port	1 pc
Colorful identification clips (used on clamps)	20 pcs

► THE SPECIFICATION OF ADDITIONAL EQUIPMENT (CURRENT CLAMPS/ ROGOWSKI COILS)



Model	clamp (C01)	clamp (C02)	clamp (C03)	clamp (C04)	clamp (C05)	Rogowski coil (C06)	Rogowski coil (C07)	Rogowski coil (C08)
Range	0-5A	0-100A	0-200A	1-1000A	0-1000A ac/dc	1-1500A	15-3000A	20-6000A
Turns ratio	10mV/A	10 mV/A	10 mV/A	1 mV/A	1mV/A	100mV/1000A	65 mV/1000A	65mV/1000A
Accuracy	0.2%	0.2%	0.2%	1.0%	±3%	±0.5% (+position error)	1.0% (+2% position error)	±1% (+position error)
Size mm	Ø8	Ø8	Ø13	Ø52	30x35	Ø110	Ø160	Ø250
Ordering code	CZ/20-199-00-00115	CZ/20-199-00-00117		CZ/20-199-00-00118	CZ/20-199-00-00128	CZ/20-199-00-00129	CZ/20-199-00-00120	CZ/20-199-00-00130

ORDERING CODE

NP41 ordering code:

Portable power quality analyzer NP41	X	XX	X	X
Additional equipment:				
lack	0			
4 pcs. current clamps 5 A	1			
4 pcs. current clamps 100 A	2			
4 pcs. current clamps 200 A	3			
4 pcs. current clamps 1000 A	4			
4 pcs. current clamps 1000 A a.c./d.c.	5			
4 pcs. Rogowski coils 1500 A	6			
4 pcs. Rogowski coils 3000 A	7			
4 pcs. Rogowski coils 6000 A	8			
Version:				
standard		00		
custom-made*		XX		
Language:				
Multilanguage (Polish/English)			M	
Acceptance tests:				
without extra requirements			0	
with an extra quality inspection certificate			1	
with a calibration certificate			2	
acc. to customer's request*			X	

*after agreeing with the manufacturer

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