



## NP45 - PORTABLE POWER QUALITY ANALYZER

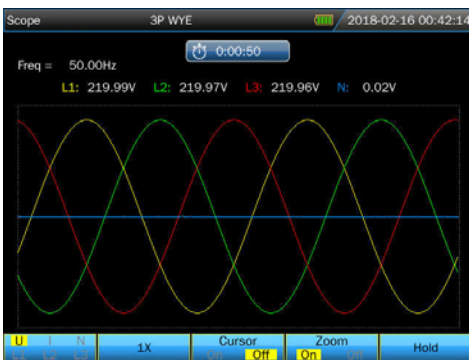
NP45 power quality analyzer is the professional portable device to measure and analyze the power system quality, supply the harmonics analysis and power quality data analysis. also provide big memory for the data storage, which is used to make the long term logger measuring to power system. The PC software can simply upload the data to PC for full analysis.

### FEATURES

- 5.6" TFT color screen. 640 x 480 pixel.
- 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 voltage, current, harmonics, power, energy, inrush current, flicker and other.
- Graphical presentation of data in a waveform and vector diagram.
- Record of events: dips, swells, overvoltages.
- Power quality according to EN-50160 standard or user-defined limit.
- Registration of user-defined parameters in the 32GB internal memory (registration time from 2 h up to 1 year).
- 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, CD with software, user's manual.



## MEASUREMENTS MODES



### 1 Scope

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
U <sub>rms</sub> (V)	220.00	220.00	220.00	0.02
U <sub>pk</sub> (V)	311.21	311.17	311.17	0.07
CF	1.41	1.41	1.41	3.77
	L1:	L2:	L3:	N
I <sub>rms</sub> (A)	0.17	0.26	0.34	0.06
I <sub>pk</sub> (A)	0.35	0.55	0.67	0.18
CF	2.09	2.12	1.97	3.18



### 3 Dips & Swells

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

### 4 Harmonics

Harmonics and interharmonics measurement up to the 50th. parameter DC component. THD. K-factor.

	L1:	L2:	L3:	N
U <sub>thd</sub>	18.03	45.16	46.03	100.00
U <sub>dc</sub>	0.27	0.26	0.88	0.00
I <sub>thd</sub>	68.31	100.00	100.00	100.00
I <sub>dc</sub>	0.00	52.35	22.98	100.00
U <sub>harm 1</sub>	100.00	100.00	100.00	100.00
U <sub>harm 2</sub>	0.00	2.24	6.75	60.18
U <sub>harm 3</sub>	15.00	34.60	34.60	39.86

	L1	L2	L3	Total
P(kW)	0.00	0.00	0.00	0.00
S(kVA)	0.00	0.00	0.00	0.00
Q(kvar)	0.00	0.00	0.00	0.00
PF	0.00	0.00	0.00	0.00
cosΦ	1.00	-0.56	-0.94	
tanΦ	9999.00	9999.00	9999.00	9999.00
U <sub>rms</sub> (V)	0.05	0.06	0.06	
I <sub>rms</sub> (A)	0.54	0.07	0.08	

### 5 Power and energy

Full power parameters measurement including V<sub>rms</sub>/A<sub>rms</sub>/KW/KVA/KVAR/TPF/DPF and energy data KWh/kVAh/kVARh.

### 6 Flicker

Support measure the parameters P<sub>st</sub> (<10 min), P<sub>lt</sub> (<2 hrs), also P<sub>st</sub> (1 min) for quick feedback and instant flicker pinst in trend.

	L1	L2	L3
P <sub>inst</sub>	1.82	1.82	1.82
P <sub>st</sub>	0.96	0.96	0.96
P <sub>lt</sub>	0.00	0.00	0.00

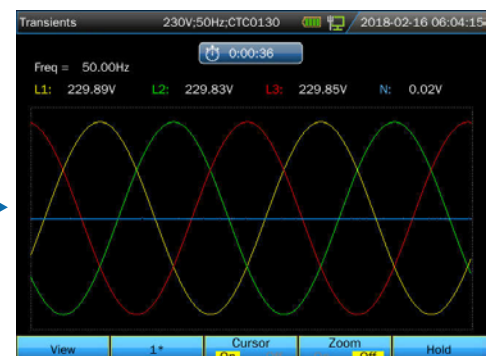


### 7 Unbalance

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 20Ks/s.



## MEASUREMENTS MODES



**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 downloaded to PC by USB and check by Power 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 they meet the requirements limited by users or default standards EN50160. The monitoring time lasts from 2 hours to 7 days.

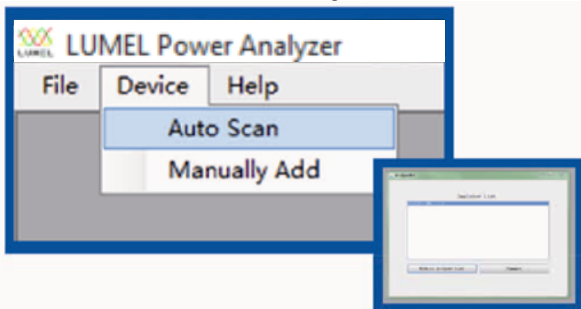
**12 Wave Record**  
The waveform of voltage and current could be recorded through this function, the sample rate is up to 20k and the duration time is settable.



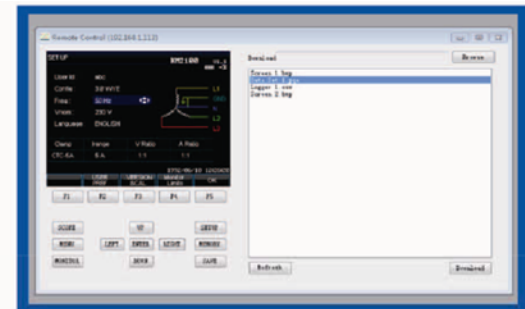
## LUMEL POWER ANALYZER SOFTWARE

LUMEL Power Analyzer 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



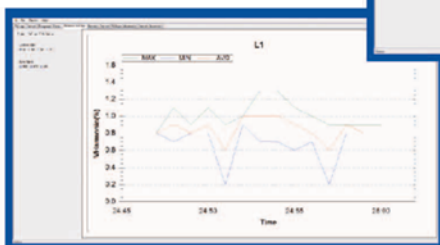
Remote control interface



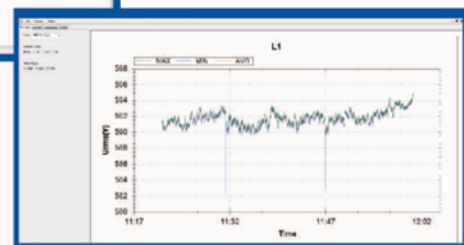
Monitor the user-demanded parameters



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



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



## TECHNICAL DATA

### ▶ INPUTS

#### VOLTAGE INPUTS

Input Channels	4 (3-phase + neutral)
Max. input voltage	1000 Vrms
Range of nominal voltage	50...500V
Max pulse peak voltage	6kV
Bandwidth	>3kHz
Input impedance	4MΩ/5pF

#### CURRENT INPUT

Number of input	4 (3-phase+ neutral) DC coupling
Type	clamp current sensor with mV output
Input range	depends on the CT clamps: 5A/50A/100A/1000A/1500A/3000A/5000A/6000A
Input Impedance	100 kΩ
Bandwidth	>3kHz

#### SAMPLING SYSTEM

Resolution	8 channels 16 bits AD
Sampling rate	163.84kS/s for each channel. 8 channels sample synchronously
RMS sampling	5000 points for 10/12 cycles (according to EN 61000-4-30)
PLL synchronizacja	4096 points for 10/12 cycles (according to EN 61000-4-7)

### ▶ MEASUREMENT

		Measurement range	Resolution	Accuracy
<b>VOLTAGE/CURRENT/FREQUENCY</b>				
Vrms (AC+DC)		1 ~ 1000 Vrms	0.01 Vrms	± 0.1% of nominal voltage
Vpk		1 ~ 1400 Vpk	0.01 Vpk	± 0.5% of nominal voltage
V (crest factor)		1.0 ~ >2.8	0.01	± 5%
Arms (AC)	10mV/A	0~150 A	0.01A	± 0.1% ± 0.1A
	1mV/A	1~ 2000 A	0.01A	± 0.1% ± 0.1A
	65mV/1000A	10~6000A	0.01 A	±1% ±2A
A (crest factor)		1 ~ 10	0.01	± 5%
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
<b>DIPS &amp; SWELLS</b>				
Vrms1/2		0 ~ 200% of nominal voltage	0.01 Vrms	± 0.2 %
Arms1/2		dependent on CT clamps	0.01 A	± 1%

## ► MEASUREMENT

	Measurement range	Resolution	Accuracy
<b>HARMONIC</b>			
Harmonic number	1 ~ 100 (50/60 Hz); 1~12 (400 Hz)		
Harmonic voltage	0.0 ~ 100.0%	0.01%	$\pm 0.1\% \pm n \times 0.1\%$
Harmonic current	0.0 ~ 100.0%	0.01%	$\pm 0.1\% \pm n \times 0.1\%$
THD	0.0 ~ 100.0%	0.01%	$\pm 2.5\%$
Phase	-180°~180,0°	0,1°	$\pm n \times 0.1^\circ$
<b>POWER &amp; ENERGY</b>			
Active power P (kW), apparent power S (kVA), reactive power Q (kvar)	max 6000 MW	0.1kW	$\pm 1\% \pm 10$ characters
kWh, kVAh, kvarh	depending on the rated voltage and CT clamps		$\pm 1\% \pm 10$ characters
Power factor (TPF)	0 ~ 1	0.01	$\pm 0.1\%$
Cosφ (DPF)	0 ~ 1	0.01	$\pm 0.1\%$
<b>FLICKER</b>			
Pst (1min), Pst. Plt. PF5	0.00 ~ 20.00	0.01	$\pm 5\%$
<b>UNBALANCE</b>			
Voltage	0.0 ~ 20,0%	0.1%	$\pm 0.1\%$
Current	0.0 ~ 20.0%	0.1%	$\pm 1\%$
Voltage phase	-360° ~ 0°	0.1°	$\pm 0.1^\circ$
Current phase	-360° ~ 0°	0.1°	$\pm 0.5^\circ$
<b>VOLTAGE TRANSIENT</b>			
Vpk	$\pm 6000$ Vpk	1V	$\pm 15\%$
Vrms	10 ~ 1000Vrms	1V	$\pm 2.5\%$
Min. Test Time	6.5 μs		
Sampling rate	163.84kS/s (50/60Hz)		
<b>INRUSH CURRENT</b>			
Arms (AC+DC)	depending on CT clamps	0.01	$\pm 1\% \pm 5$ digits
Inrush duration	1s ~ 32min selectable	10 ms	$\pm 20$ ms
<b>LOGGER</b>			
Recording	user-definded parameters for 4 phases at the same time		
Memory	data stored in TF card. 32GB		
Duration time	2 hrs to 1 year		
Interval	1s to 1 hr		

## ► GENERAL CHARACTERISTICS

DISPLAY	
Screen	color TFT LCD
Size	5.6 inch
Resolution	640×480
Brigthness	adjustable
HOUSING	
Protection	protection shield. strong
IP	IP53 acc. to EN 60529
INTERFACE	
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.
GPS (option)	Activated with an additional external receiver.
WiFi	For remote control of the analyzer and measurement data transmission.
MEMORY	
FLASH memory	1GB
Tf card	32GB
MECHANICAL	
Dimension	270× 190 × 66mm
Weight	2.0 kg
ENVIROMENT	
Working temperature	0°C~ 40°C
Storage temperature	-20°C~ 60°C
Humidity	90% relative humidity
POWER	
Adapter input	90~264V
Adapter output	9V 2.2A
Battery	rechargeable lithiumion 7.4V 5200mAh
Battery working time	> 7 hours
Battery charge time	4 hours
STANDARD	
Measurement method	EN 61000-4-30 Class-A
Measurement performance	EN 1000-4-30 Class-S
Power quality monitoring	EN 50160
Flicker	EN 61000-4-15
Harmonic	EN 61000-4-7
ELECTRICAL SAFETY	
Comply with	EN 61010-1
Max. voltage at voltage input	600V CAT IV. 1000V CAT III
Max. voltage at current input	30V

## ► ANALYZER SET

Voltage tests leads alligator clips	length 2m. 5 pcs
Power adapter DC	1 pc
Power patch cord	1 pc
Soft carry bag	1 pc
Hang strap	1 pc
CD wit software. user's manual	1 pc each

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



Model	KLC8C-5A (clamps)	CTC0080-50A (clamps)	CTC0130-100A (clamps)	CTC1535-1000A (clamps)	PY-3000A (Rogowski coils)	PY-5000A (Rogowski coils)	ETCR035AD (clamps)	SY-1500A (Rogowski coils)	SY-6000A (Rogowski coils)
Range	0-5A	0-50A	1-100A	1-1000A	15-3000A	20-5000A	0-1000A ac/dc	1-1500A	20-6000A
Turns ratio	10mV/A	10 mV/A	10 mV/A	1 mV/A	65 mV/1000A	50 mV/1000A	1mV/A	100mV/1000A	65mV/1000A
Accuracy	0,2%	0,2%	0,2%	1,0%	1,0% (+2% błąd położenia)	1,0% (+2% błąd położenia)	±4%	±0,5% (+błąd pozycji)	±1% (+błąd pozycji)
Size mm	Ø8	Ø8	Ø13	Ø52	Ø162	Ø143	30x35	Ø111	Ø255
Ordering code	CZ/20-199-00-00115	CZ/20-199-00-00116	CZ/20-199-00-00117	CZ/20-199-00-00118	CZ/20-199-00-00120	CZ/20-199-00-00119	CZ/20-199-00-00128	CZ/20-199-00-00129	CZ/20-199-00-00130

## ORDERING CODE

Table 1. NP45 ordering code:

Portable power quality analyzer NP45	X	XX	X	X
<b>Additional equipment:</b>				
lack	0			
4 pcs. Rogowski coils PY 3000 A	1			
4 pcs. Rogowski coils PY 5000 A	2			
4 pcs. current clamps KLC8C 5 A	3			
4 pcs. current clamps CTC0080 50 A	4			
4 pcs. current clamps CTC0130 100 A	5			
4 pcs. current clamps CTC1535 1000 A	6			
4 pcs. current clamps ETCR035AD 1000A ac/dc	7			
4 pcs. Rogowski coils SY 1500A	8			
4 pcs. Rogowski coils SY 6000A	9			
<b>Version:</b>				
standard		00		
custom-made*		XX		
<b>Language:</b>				
Multilanguage (Polish/English)			M	
other*			X	
<b>Acceptance tests:</b>				
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

## PORTABLE MULTIMETERS & METERS

MORE INFORMATION  
IN OUR CATALOG:



NP45-19A-en

**LUMEL**  
EVERYTHING COUNTS

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