



NP45 - PORTABLE POWER QUALITY ANALYZER

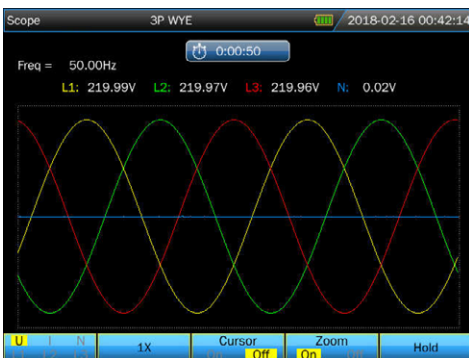
NP45 power quality analyzer is the professional portable device to measure and analyze the power system quality. supply the harmonics analysis and power quality data analysis. also provide big memory for the data storage. which is used to make the long term logger measuring to power system. The PC software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

Volts/Amps/Hz 230V;50Hz;CTC1535 2017-06-15 07:52:30

Freq = 50.00Hz

| | L1: | L2: | L3: | N |
|---------|--------|--------|--------|------|
| Urms(V) | 220.00 | 220.00 | 220.00 | 0.02 |
| Uplk(V) | 311.21 | 311.17 | 311.17 | 0.07 |
| CF | 1.41 | 1.41 | 1.41 | 3.77 |
| | L1: | L2: | L3: | N |
| Irms(A) | 0.17 | 0.26 | 0.34 | 0.06 |
| Ipk(A) | 0.35 | 0.55 | 0.67 | 0.18 |
| CF | 2.09 | 2.12 | 1.97 | 3.18 |

F1 F2 F3 F4 F5

2 Voltage/Current/Frequency

Measure voltage/current/frequency and crest factor.



3 Dips & Swells

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

Harmonics 230V;50Hz;CTC0080 2018-02-16 02:13:39

| | L1: | L2: | L3: | N |
|---------|--------|--------|--------|--------|
| Uthd | 18.03 | 45.16 | 46.03 | 100.00 |
| Udc | 0.27 | 0.26 | 0.88 | 0.00 |
| Ithd | 68.31 | 100.00 | 100.00 | 100.00 |
| Idc | 0.00 | 52.35 | 22.98 | 100.00 |
| Uharm 1 | 100.00 | 100.00 | 100.00 | 100.00 |
| Uharm 2 | 0.00 | 2.24 | 6.75 | 60.18 |
| Uharm 3 | 15.00 | 34.60 | 34.60 | 39.86 |

4 Harmonics

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

Power&Energy 230V;50Hz;CTC0130 2018-02-17 08:28:01

| | 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 |
| Urms(V) | 0.05 | 0.06 | 0.06 | |
| Irms(A) | 0.54 | 0.07 | 0.08 | |

5 Power and energy

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

Flicker 230V;50Hz;CTC0130 2018-02-16 03:20:16

| | L1 | L2 | L3 |
|-------|------|------|------|
| Pinst | 1.82 | 1.82 | 1.82 |
| Pst | 0.96 | 0.96 | 0.96 |
| Plt | 0.00 | 0.00 | 0.00 |

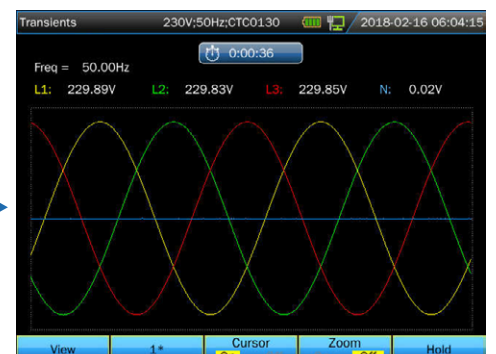
6 Flicker

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



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 meet the requirements limited by users or default standards EN50160. The monitoring time lasts from 2 hours to 7 days.

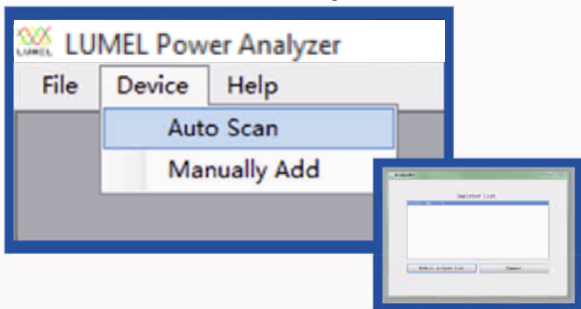


12 Wave Record
The waveform of voltage and current could be recorded through this function, the sample rate is up to 20k and the duration time is settable.

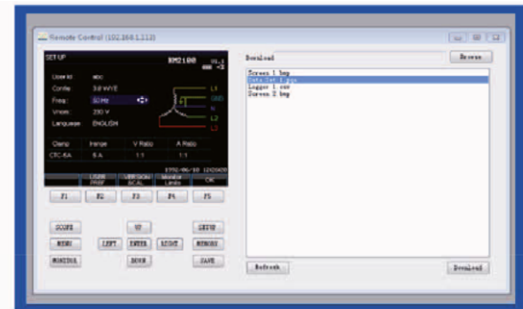
LUMEL POWER ANALYZER SOFTWARE

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

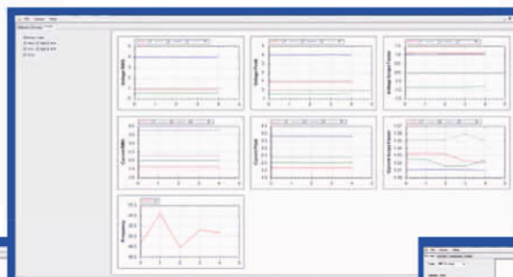
AUTO Scan the device connected to PC through LAN interface



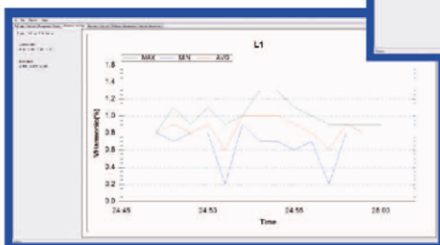
Remote control interface



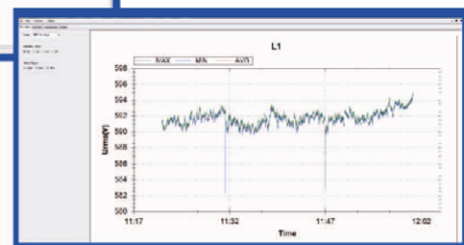
Monitor the user-demanded parameters



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 |
|----------------------------------|--------------------------------|-----------------------------|------------|---------------------------|
| VOLTAGE/CURRENT/FREQUENCY | | | | |
| 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 |
| DIPS & SWELLS | | | | |
| 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 |
|--|--|------------|--------------------------------|
| HARMONIC | | | |
| 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° | $\pm n \times 0.1^\circ$ |
| POWER & ENERGY | | | |
| 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 | $\pm 0.1\%$ |
| FLICKER | | | |
| Pst (1min), Pst. Plt. PF5 | 0.00 ~ 20.00 | 0.01 | $\pm 5\%$ |
| UNBALANCE | | | |
| 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° | $\pm 0.5^\circ$ |
| VOLTAGE TRANSIENT | | | |
| Vpk | ± 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) | | |
| INRUSH CURRENT | | | |
| Arms (AC+DC) | depending on CT clamps | 0.01 | $\pm 1\% \pm 5$ digits |
| Inrush duration | 1s ~ 32min selectable | 10 ms | ± 20 ms |
| LOGGER | | | |
| 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 |
| Brighthness | 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 |

NP45 - PORTABLE POWER QUALITY ANALYZER



► 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 |
| Additional equipment: | | | | |
| 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 | | | |
| Version: | | | | |
| standard | | 00 | | |
| custom-made* | | XX | | |
| Language: | | | | |
| Multilanguage (Polish/English) | | | M | |
| other* | | | X | |
| 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