POWER QUALITY ANALYZER

PQA 8000

Power Quality

Harmonics, THD Supraharmonics, Symmetrical components etc.

System Dynamics

Phasor Measure Unit (PMU), Rate of Change of Frequency (RoCoF), WAMS, etc.

Transients

1/2 period values, Phase Angle jumps, Resonances, Switching etc.

Power

Active, reactive, apparent power, PF, harmonic power, energy, etc.

HIGH **ACCURACY**	0.05%
HIGH **SAMPLING RATE**	124kS/s or 1MS/s
HIGH **RESOLUTION**	18bit
HIGH **DYNAMIC RANGE**	0.5mA to 150kA
HIGH **SAFETY CATEGORY**	CAT IV 600V
DATA **STORAGE**	up to 1TB SSD

Batterie
4h
90 Wh

Display
10.1 inch
Multi-Touch

Isolation
6kV

Standards
IEC61000-4-30
Class A

HIGHLIGHTS

SMART TOUCH
The large 10.1 inch full-HD Smart Touch display responds immediately without any delay with intuitive operation like on a mobile phone.

MOBILE OPERATION
The integrated battery pack allows an operating time of up to 4 hours of operation. 5 LEDs indicate the remaining battery capacity. There is no need for an external power supply or special connectors... plug and play.

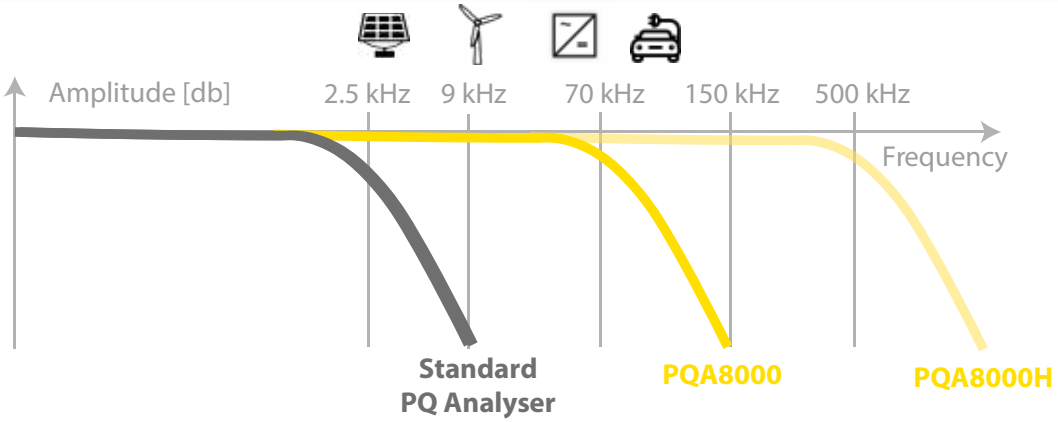
GPS
Integrated GPS enables high-precision time measurements & synchronization, which is ideal for PMU applications.

LARGE SSD
The instrument is equipped with two SSD disks. One is dedicated for the OS and application software, and the other one is equipped for data storage (up to 1 TB).

INTERFACES
The instrument provides an easy integration with other analog and digital signals such as temperature. The interfaces include USB 3.0, TCP/IP, LAN, Wifi, Bluetooth, RS232, Modbus, 104, DIO, and CAN.

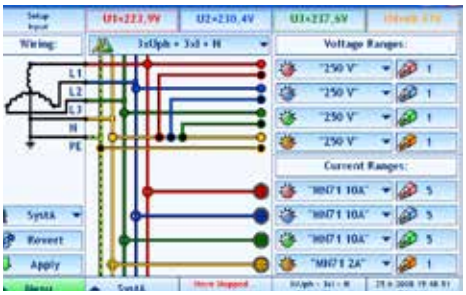
SENSOR SUPPLY
The instrument can provide excitation for your current sensors,
and there is no need for batteries or external power supplies.

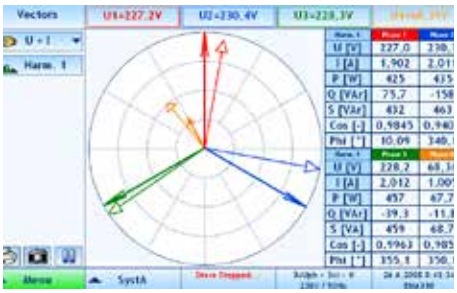
SUPRAHARMONICS UP TO 500 kHZ FOR VOLTAGE AND CURRENT
Conventional PQ Analyzers, even if they are Class A certified, are not sufficient for modern measurement applications. We use the best available components to ensure the highest safety category and also the highest accuracy. NEO instruments offer high bandwidth (up to 1 MHz) and correct the frequency dependent behavior of current & voltage sensors as well as integrated electronics to achieve the best possible measurement results.
THE REFERENCE INSRUMENT



1 SETUP

The instrument has a clear structure that shows schematics with explanations.





2 MEASURE

During measurements the user can define widgets such as Scopes, Vector Scopes, Harmonic FFTs, Tables, and Recorders.

TRUELY INTUITIVE

Intuitive Measurement menus: Cleary structured and explicit menus

HIGHLIGHTS

MESSTECHNIK

3 ANALYZE

Sophisticated functions include PQ Data, Transients, Disturbances, and Alarms.

4 REPORT

The instrument can automatically generate reports and professional documentation. The user can create reports that include all relevant information (location, comments, company logo, etc) directly on-site or during post processing. PDF reports that are saved on the instrument are always available and can be shared directly via email.

Report EN50160

Database SCADA

Remote Connection

5 EXPORT

Data can be exported into CSV, XLS, PDF, Comtrade, and PQDiff.

6 OTHER PROGRAMS

The instrument uses Microsoft Windows© as the operating system. Programs such as Microsoft Excel, Word or Matlab can be added as well as Email messaging services.

NEO SENSOR CALIBRATION

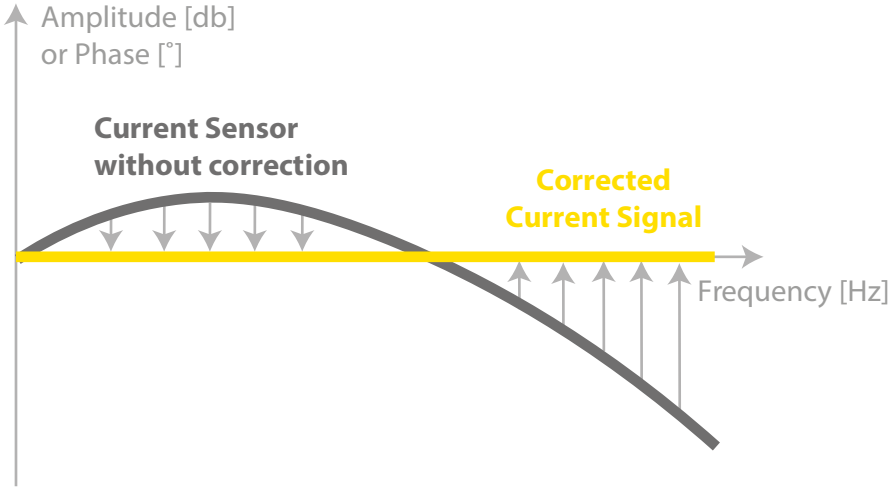
HIGHEST PRECISION

The NEO way of Sensor Integration

All current sensors offered by NEO Messtechnik are industry proven for different applications.
We use and improve on the best available sensors in the market.

1) FREQUENCY DEPENDENT CALIBRATION

The NEO sensor integration calibrates each sensor over a wide frequency bandwidth and corrects frequency dependent phase shift and amplitude damping. This enables high precision from DC to high-frequency measurements.



2) MEASUREMENT RANGE DEPENDENT CALIBRATION

In addition, the sensors will calibrated for each measurement range using multiple points.
The calibration will typically cover points from 1% to 100% of the nominal measurement range.
This will improve the accuracy and precision, especially at low current (e.g., 1% of nominal measurement range).

All sensors will be delivered with a standard calibration, which improves the accuracy compared to nominal specifications, whereas the NEO calibration will be performed on each individual sensor and needs to be ordered separately.

INSTRUMENT OPTIONS

PQA8000

4x Voltage Input 1600V DC
4x Current Input (Rogowski, Clamp)
CAN / RS485

PQA8000-P

4x Voltage Input 1600V DC
6x Current Input (Rogowski, Clamp)
2x Analog Input (± 10V)
CAN / RS485 / DIO

PQA8000-M

4x Voltage Input 1600V DC
8x Current Input (Rogowski, Clamp)
CAN / RS485 / DIO

CUSTOMIZE DESIGN

Instrument Colour

Customize the color of the rubber perimeter

Connector Color

-select the color of the connectors to match cabling or standards

In addition, the transport bag of the PQA8000 device can be embroidered with company logos.

SPECIFICATIONS & ACCESSORIES

GENERAL SPECIFICATIONS

PC	Microsoft® Windows 10 IOT(64 bit) Intel® Quad Core Processor and 8GB RAM Locked OS for reliable operation Multilanguage Support
Storage	256GB SSD for OS and application software 256GB SSD dedicated for Data storage
Display	10.1 inch Capacitive Multi-Touch TFT LCD Sunlight Readable / 800cd
Battery	Li-Ion Battery 90Wh up to 4h operation
Power Supply	115V / 230V AC
Interfaces	3x USB, 1x Ethernet, WiFi, 1x HDMI
Dimensions	298 x 225 x 95 mm 11.8 x 8.8 x 3.7 inch
Weight	4kg / 8.8pound
Temperature Range	Operating: 0 to 60°C (32°F to 140°F) Storage: -20 to 80°C (-4°F to 176°F)
IP Class	IP2X
Accessories	Transport Bag and Keyboard included
Standards & Certification	IEC61010-1 (2011) / IEC61010-2-030 / IEC 61000-4-3 / IEC 61000-4-4 / LVD Directive 2014 / EMC Directive 2014/ Rohs Directive 2015/ EN 61000-3-2 / EN 61000-3-3 / EN 61326-1 / EN 55011 +A1, Class A

OPTIONS AND ACCESSORIES

SSD Upgrade	Upgrade to 512GB or 1TB data storage
GPS	Integrated GPS receiver and GPS mouse
GSM	Integrated Modem for telecommunication
DC Power	DC Power supply input +9V …. +36V DC
Dust Cover	Protect PQA8000 instrument in tough environments
Transport Case	Ruggedized Pelican-Case (IP67), with foamed insert adapted for the measurement instrument and pullout handle
color Code	Color code for all voltage and current inputs
Temperature Sensor	Thermocouple Type K temperature sensor on DSUB15 input
Radiation Sensor	Pyranometer Sensor on DSUB15 input
Current Sensor	See Chapter Accessories
Test Leads	See Chapter Accessories

SPECIFICATIONS

neo MESSTECHNIK

VOLTAGE INPUTS

Inputs	4x
Range	Standard: 1600V/ 800V MV-Version: 600V / 20V
Accuracy	0.05% f.s.
Isolation	6kV isolation
Safety	CAT III 1000V CAT IV 600V
Impedance	10 MΩ

CURRENT INPUTS

Inputs	PQA8000: 4x PQA8000-P: 6x PQA8000-M: 8x
Accuracy	0.05% f.s.
Type	Clamp or Rogowski
Instrument Ranges Clamp	2mV to 10V (15x Ranges)
Integrator Rogowski Range	1A to 300kA
Additional Analog Inputs (AIN)	1V, 2V, 5V, 10 V
Sensor Supply	±15V / 9V
TEDS	Automatic Sensor Detection*
Impedance	10 MΩ

ANALOG DIGITAL CONVERSION (A/D)

Sampling Rate / Resolution	PQA8000: 124 kS/s / 24bit PQA8000H: 1 MS/s / 18bit
Filters	Analogue and Digital Automatic Anti-Aliasing Filter

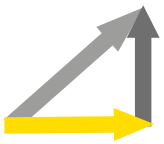
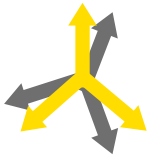
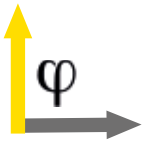
DIGITAL I/O & INTERFACES

Digital In/Out	Adjustable Trigger max. 350V
CAN, RS485	Selectable Termination

POWER QUALITY

POWER

Voltage Current | Power | Vector | Reactive Power | Energy | Digital Signalling

Power Calculation	P, Q, S, PF, cos phi, D, DH, QH
Frequency	10 sec, AVE, MIN, MAX
Voltage, Current	RMS, AVE, MIN, MAX, ½ Period-values, 200ms, 10s, 10min
Energy	Total, positive, negative (P, Q, P+, P-, Q+, Q-)
Efficiency	DC / AC, U-I Curve for PV
Wiring	DC, 1-Phase, 2-Phase, 3-Phase Star and Delta

WAVEFORM & TRANSIENTS

Transients | Resonances Oscillations | Switching | DC Offset | Overvoltage | Undervoltage

MIN, MAX, RMS, AVE	U, I, P, Q, S, f, PF, phi, THD, Harmonics, Interharm., Unbalance, etc.
ENVELOPE / WINDOW	U, I
DELTA	dU, dI, df, dP, etc.
DERIVATE (RATE OF CHANGE)	dU/dt, df/dt etc. … per ms, number of periods or half-period
COMBI-TRIGGER	Combination of triggering including mulitple conditions
VOLTAGE SIGNALLING	Threshold
RAPID VOLTAGE CHANGES (RVC's)	dU, dc, dt
EN50160	Trigger on any EN50160 parameter (Max, Quantil)

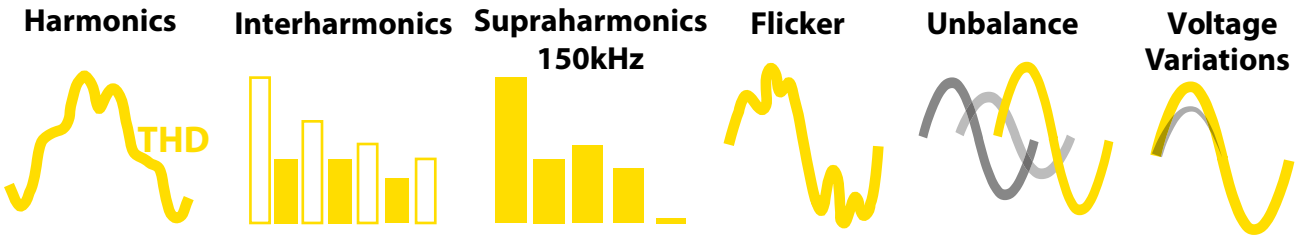
COMPLYING STANDARDS

POWER QUALITY, HARMONICS, FLICKER:
IEC61000-4-30 Ed. 3 Class A / IEC61000-4-7 / IEC61000-4-15 /
IEC62586-2 Ed. 2 / IEC62586-1
PUBLIC GRID, RAILWAY AND INDUSTRY
EN50160 / EN50163 / IEC61000-2-2 / IEC61000-2-4 (Class 1; 2; 3) /
IEEE519 / IEEE 1159 / IEC61000-2-12 / NRS048
WIND POWER, RENEWABLES AND GRID CODES
IEC61400-21 / IEC61400-12 / FGW-TR3 / VDE N-4105 / VDE N-4100 /
VDE N-4110 / D-A-CH-CZ / BDEW / ROCOF / IEEE C37.118-2005 (PMU)
MOTORS, TRANSFORMERS AND ELECTRICAL EQUIPMENT
IEC60034 / IEC 60076-1 / IEC61000-3-2 / IEC61000-3-3 / IEC61000-3-11 / IEC61000-3-12

CLASS A++

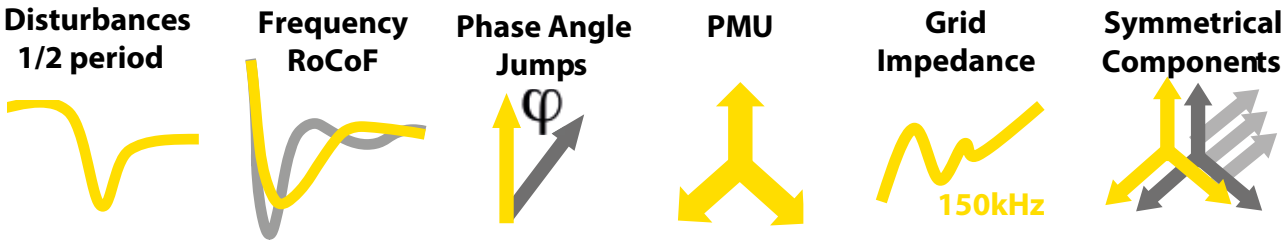
MESSTECHNIK

POWER QUALITY



according to IEC 61000-4-30 Ed.3 and IEC 62586	
Harmonics (Voltage, Current, Phi, Power)	Class A
Interharmonics	Class A
THD U, THD I	Class A
Higher Frequencies (200Hz band)	2 - 9 kHz (can be calculated from 0 to definable upper limit)
Higher Frequencies (2000Hz band)	8 - 150 kHz / 500 kHz for voltage and current (PQA 8000H)
Symmetrical Components & Unbalance (Pos-, Neg- and Zero Sequence)	Class A
Rapid Voltage Changes	Class A
Flicker (PST, PLT, Pinst)	Class A
Voltage Events (dip, swell, interruption – time, extrema, length)	Class A
Frequency	10 sec, AVE, MIN, MAX
Voltage, Current	RMS, AVE, MIN, MAX, ½ Period-values, 200ms, 10s, 10min
Time Synchronisation	Class A

DISTURBANCES AND SYSTEM DYNAMICS



1/2 PERIOD TRIGGER	U, I, P, Q, S, f, PF, phi, THD, Harmonics, Interharm., Unbalance, etc.
PHASE ANGLE TRIGGER	phi
SYMMETRICAL COMPONENTS	Pos., Neg., Zerosequence
RATE OF CHANGE FREQUENCY (ROCOF)	df/dt
Phasor Measure Unit (PMU) according to IEEE C37.118	Total Vector Error 0.01% (typ.) Angle Error 0.003°(typ) Timestamp Accuracy 0.1 µs up to 50 fps / via TCP / open PDC format / Offline storage possible

ADDITIONAL FEATURES INCLUDE

- ☑ compounded trigger settings
- ☑ definable pre-triggers and post-time extensions