UNIPOWER

Power Network Analyser

Unilyzer 902

The need for portable Power Network Analysers

Increased focus on Power Quality is bringing analysis up to a broad scale this decade. Not only technical performance is in focus when selecting the power network analysis tool, but also field conditions are becoming important when the analysis goes beyond control rooms and is being deployed in the network.

The Unilyzer 902 is a portable analyser made for Power Quality measurements in the power distribution network. The Unilyzer 902 platform consists of a stand-alone unit that is dust and splash-proof (IP65) and has no moving parts. It measures all parameters in national and international norms, like IEC 61000-2-12, and captures disturbances, like transients, sags and swells simultaneously! The rough environment enclosure allows the Unilyzer 902 to measure anywhere in the network and the new platform is based on latest technology available in order to give maximum performance and numerous applications.

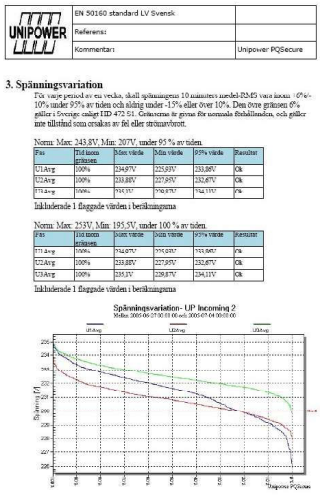
Combining high performance with ease of use and ease of installation we offer you a complete package including measuring unit, transducers and all necessary software in a specially designed carrying case. On site, a Unilyzer 902 is up and running in no time!

High performance

Thanks to the powerful DSP-technology Unilyzer 902 measures all periods without any time gaps. To ensure highest possible accuracy the Unilyzer 902 also has a built-in hardware PLL (Phase-Locked-Loop) locking to the fundamental frequency. Unilyzer 902 measures simultanously voltage, current, power, energy, all power quality parameters and disturbances like transients and sags and swells.

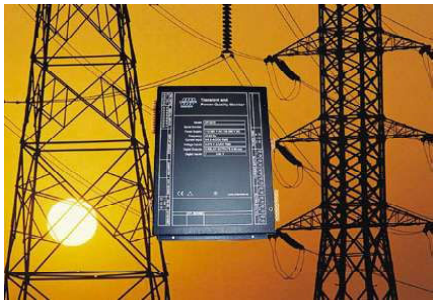
Disturbances

Four independent trig-channels capture sags, swells, fast transients, interruptions and other events simultaneously. Waveforms and other parameters are recorded on all eight channels with every event.



Automatic analysis in accordance with recognised standards, such as EN 50 160, saves time and effort.

Unilyzer 902 can also be integrated into PQ Secure, Unipower's Power Quality Management system.



- Power Quality analysis (e.g. IEC 61000-2-12)
- Automatic transducer identification
- V, A, W, VA, VAr, kWh, kVArh, PF, cos phi, Hz, IFL, P_{ST}, P_{LT}, energy and more
- Harmonics analysis and interharmonics (IEC 61000-4-7)
- Direction of power harmonics
- Flicker, IEC 61000-4-15
- All parameters IEC 61000-4-30 Class A
- PQ Secure, Power Quality Management
- Transients, sags and swells
- Signalling voltage
- Automatic analysis according to recognised standards

The Unilyzer 902 is dust- and splash-proof. It can thus be used in all environments.

Unique Real-Time Features

If connected to a PC, Unilyzer 902 offers powerful real-time capabilities including values display, an eight channel oscilloscope, a harmonics spectrum analyser and a trend-graph showing the last 24-hours of all measured parameters and events without having to download any data to the host computer. The phasor (vector) diagram helps to identify phase relationships and to check wiring connections.

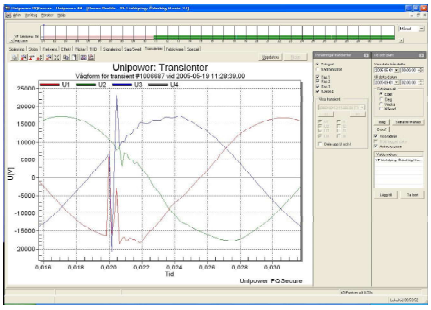
Software for Evaluation

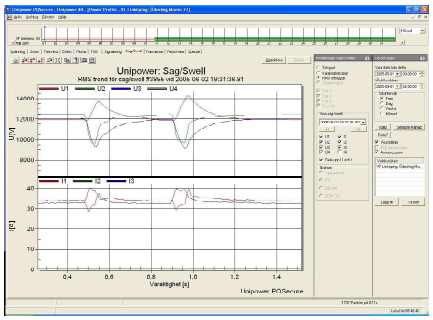
Unipower offers powerful evaluation capabilities. The programme **PQOnline** is used to configure measurements, study real-time values and for for downloading measurement files for further analysis. With the software **PQSecure** the user has access to a powerful graphical analysis tool as well as event lists, report generator and much more.

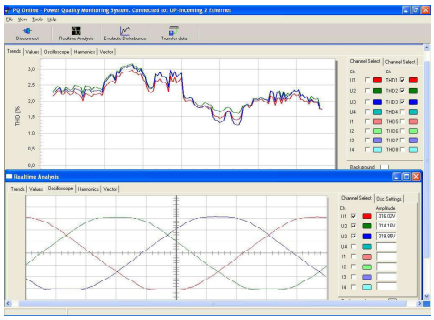
Flexibility

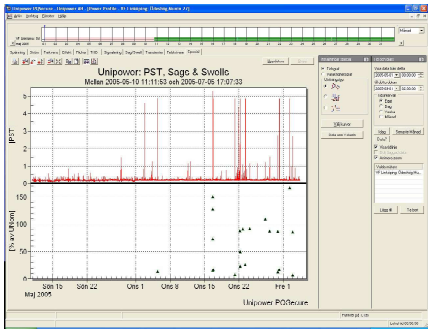
The Unilyzer 902 can operate stand-alone or be connected to a PC for real-time operation. As a stand-alone unit it is robust and easy to use - only one button to bother about. On site, when connecting the unit and checking the status in the network the real-time module is invaluable.
The Unilyzer 902 has an internal modem (optional) and Ethernet interface (optional) that allow remote access to the unit. For the really remote site a GSM-modem can be connected to the unit. If integrated in the PQ Secure Power Quality Management System measure data can even be automatically downloaded.

1. **All transients are captured with a pre-trig and all channels are recorded with every event. By studying voltage and current simultaneously the transient direction can be determined.**
2. **A sag/swell is a change in the voltage rms value. When the limits are exceeded the event is recorded with the depth and duration. All channels are recorded with every event.**
3. **The real-time trend graph gives immediate information on variations the last 24 hours, without requiring any download of data. The oscilloscope and the phasor diagram gives valuable information when connecting the instrument.**
4. **All parameters can easily be plotted in time diagrams, be printed or be exported to other formats. You can easily export any data to, for example, Microsoft Excel.**
5. **Powerful real-time features, with updates every second.**

1


2


3


4


5

Unilyzer 902 - Technical Specification

Voltage inputs

Voltage channels	4 differential inputs
Channel input level	700 V RMS (275V optional)
Resolution	14 bits (84 dB)
Basic sampling rate	256 samples/cycle
Input impedance	2 Mohm
Bandwidth	3.2 kHz analogue anti-alias filters
Accuracy	IEC 61000-4-30 class A (0,1%)

For maximum accuracy, automatic synchronisation to the power frequency is ensured by a phase-locked loop (PLL).

Voltage transient inputs

Transient channels	4 differential inputs
Channel input level	+/- 1,5 kV (4 kV optional)
Resolution	14 bits (84 dB)
Transient detection	0.5 us duration
Input impedance	2 Mohm
Bandwidth	3 MHz

Current inputs

Current channels	4 differential inputs
Channel input level	0 - 200 mV RMS. Transducers available in the range 0 to 2000 A.
Resolution	14 bits (84 dB)
Basic sampling rate	256 samples/cycle
Input impedance	3 Mohm
Bandwidth	3.2 kHz analogue anti-alias filters
Accuracy	0.1%

Storage interval	Individually selectable storage intervals for different parameters, from 1 seconds or longer. The default storage interval is 10 minutes.
Storage capacity	32 MB solid state, non-volatile flash memory for measure data. With default settings the memory will hold ca 100 days of measure data, up to 450 sag/swell trends, 75 transient waveforms and over 100,000 events. 0.5 or 2 GB memory optional.
Communications	Built-in RS-232. Optional Ethernet and internal modem. Support for external modems, radio devices, ISDN- and GSM/GPRS-modems. The measure unit can also interface with other systems using either Modbus or PQDif (IEEE 1159.3).
Size W x H x D	340 x 337 x 85 mm (including transducers)
Enclosure	IEC 529 - IP65, dust- and splash-proof
Operating temperature	-10 °C to +50 °C
Operating humidity	10% - 98% non-condensing
Weight	2.6 kg
Personal safety	EN 61 010-1

EMC	IEC 61000-6-4 and IEC 61000-6-2 (EN 50081-1,2; and EN 50 082-1,2)
Power supply	110/230 V AC or 100-375 VDC
Voltage quality	EN 50160, IEC 61000-2-2, IEC 61000-2-12 and others.
Harmonics	IEC 61000-4-30 Class A (IEC 61000-4-7)
Flicker	IEC 61000-4-30 Class A (IEC 61000-4-15)
Power Quality	IEC 61000-4-30 Class A

Measurements

Voltage and current	Gapless RMS value every ½ cycle. Min, max and average value for each storage interval.
Frequency	50 or 60 Hz (16 2/3 Hz optional)
Harmonics	Harmonics and inter-harmonics up to 50th. THD factors (THDF, THDR; TDD, THDI, K-factor etc.) and 3-sec Max harmonics.
HPA	Individual Harmonic Phase Angles up to 50th harmonic.
Power Harmonics (PFFT)	Power harmonics up to the 11th with sign indicating disturbance direction.
Flicker:	IFL (real time flicker), Pst and Plt calculated in accordance with IEC 61000-4-15
Unbalance	Positive-, negative- and zero phase sequence voltage/current plus unbalance (%) in accordance with standard IEC 61000-4-30 Class A
Signalling Voltage	In accordance with EN 50160 & IEC 61000-4-30
Sags and swells	All channels are recorded up to 30 s. Selectable pre and post trig. Sag management data. Event depth, duration and disturbance direction calculated.
Transients	All events with a duration >0.5us are captured. All channel waveforms are recorded. Selectable trig condition. Peak voltage, maximum deviation level and duration calculated.
Power quantities	All three-phase configurations. Active power [kW], Reactive power [kVAr], Apparent power [kVA], Power Factor, Displacement Power Factor (cos phi), Active Energy [kWh], Reactive energy [kVArh], Apparent energy [kVAh]
Slowscan	Module enables RMS recording up to 5 minutes. Multiple triggers available: Frequency threshold, Voltage threshold, dI/dt, dP/dt, dQ/dt and dF/dt.
Current trig	Set the instrument to trig on specified current threshold.
RVC	Rapid voltage changes in accordance with IEC 61000-3-7 and 61000-4-30 Class A
dF/dt	Stores the maximum frequency rate of change, dF/dt, and Fmin, Fmax within storage interval

Data Storage and Real-Time Capabilities

Measured values are stored in a non-volatile flash memory. The system does automatic statistics like average, minimum and maximum values as well as cumulative probability analysis for flicker.

Unilyzer 902 can also be connected to a PC for powerful real-time analysis including waveforms, values, harmonics spectrum and more. Real-time and all other measurements are performed simultaneously and the update is continuous . The system has automatic transducer identification.

Rev. 2.1 AE Specifications are subject to change without notice.

UNIPOWER

Unipower AB, Metallgatan 4C, Box 411
SE-44128 Alingsås, Sweden
E-mail: mail@unipower.se, Phone: +46 322 638020
Fax: +46 322 638060, http://www.unipower.se