GOSSEN METRAWATT

Safety through Competence

MAVOWATT 30 POWER Visa

Unpack and Fire Away

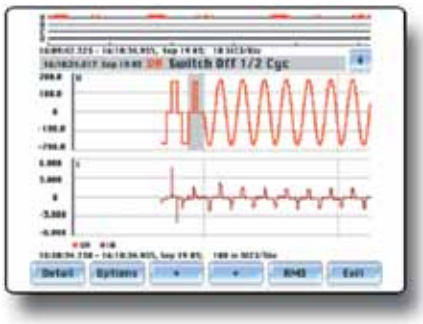
Mains Quality

High Performance for Standard Applications

The MAVOWATT 30 three-phase mains disturbance analyzer unites basic functionality with a simple user interface.

The eight independent input channels are controlled via the touch-screen. Mains type is detected and a configuration is selected during automatic setup, and the instrument is immediately ready for use. The user can select length and type of data collection including troubleshooting, data logging and mains quality monitoring, as well as energy and load distribution. The MAVOWATT 30 samples each signal at a rate of 256 values per period, can be equipped with optional RS 232, Ethernet or USB port and complies with currently valid standards.

EN50160 – Voltage characteristics of electricity supplied by public distribution networks
IEC / EN 61000-4-7 – General guide on harmonics and interharmonics measurements and instrumentation, for power supply systems and equipment connected thereto
IEC 61000-4-15 Flickermeter – Functional and design specifications
IEC 61000-4-30, class A – Power quality measurement methods
American standards IEEE 1159, IEEE 519 and IEEE1453 are fulfilled as well.

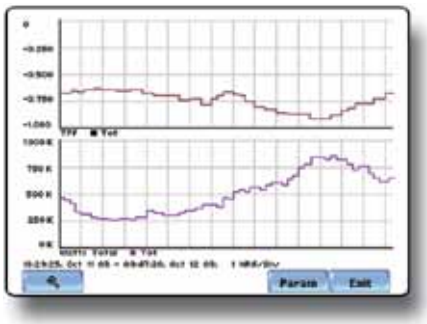


System Testing

Before connecting a new piece of operating equipment, the MAVOWATT 30 can be used to easily determine whether or not this is possible with the existing installation. The instrument is equipped with high performance functions for TRMS value triggering, acquisition of low and mid-frequency transients and trigger linking between channels. In this way, for example, it can be substantiated that uninterruptible power supplies function correctly. Real-time measurements during maintenance and initial start-up provide the user with information for fine tuning operating equipment.

Troubleshooting

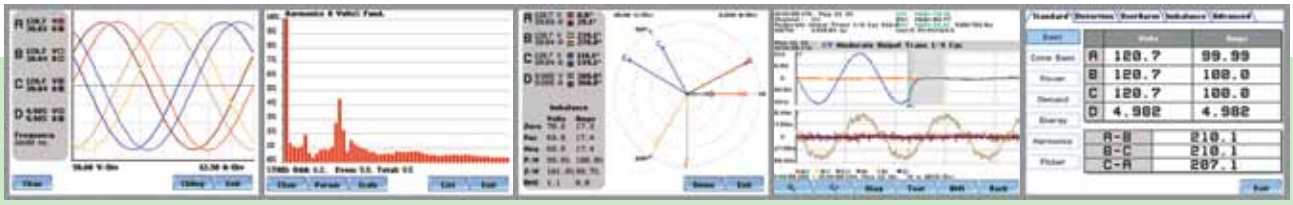
The unique display panel at the MAVOWATT 30 provides immediate information regarding on-site mains quality. Numerous mains monitoring data are acquired, analyzed and displayed in color-coded fields. Critical areas are highlighted in red, and can thus be quickly identified. Detailed information regarding troubleshooting can be queried by touching the screen, and helps to pinpoint the sources and exact causes of mains quality disturbances.



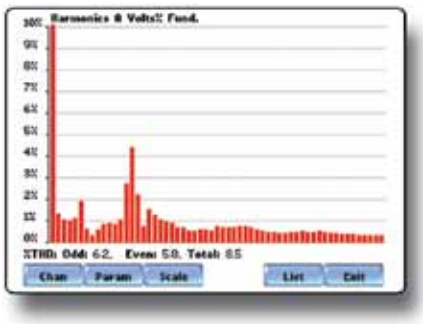
Energy Monitoring

Energy costs frequently make up the greatest portion of a system's operating costs. Savings of 10 to 40% per year can be achieved by reducing consumption during peak tariff periods, procuring energy-efficient operating equipment and selecting the right power utility. The MAVOWATT 30 is an outstanding tool for tracking energy and includes monitoring of consumption, load profiles, peak loads and making operations for large loads with the goal of reducing costs. Furthermore, energy costs can be easily traced and allocated to the appropriate processes or departments. And this is the basis for responsible use of valuable resources.

- 8 differential inputs
- Certified to IEC 61000-4-30 class A
- Unique operating concept with touch-screen
- Automatic setup/detection of measurement type / mains type
- Automatic analysis/evaluation of measurement results in a matter of just seconds
- Automatic report generation with ultramodern PC software

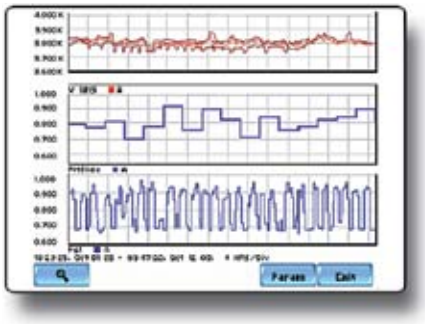


Measurement data are displayed in real-time in oscilloscope, multimeter and event views, and as a frequency spectrum or phasor diagram. By touching the screen with a finger or the entry wand, data can be viewed and the display can be zoomed in on detected disturbances in order to obtain further details and an automatic events description. Measured values saved to the memory card can be transferred to a computer for evaluation, analysis, visualization and reports generation with market-leading Dran-View software.



Harmonics

Power electronics, which are used more and more commonly in air conditioning systems, computers, office machines, control and drive technology, as well as in production systems, generate harmonics on the one hand, and are sensitive to them on the other. And harmonics do indeed cause small, usually imperceptible power fluctuations which add up to considerable damage in the long-term. Current harmonics emitted from a single source can cause interference throughout the entire network, without the network being affected itself. The MAVOWATT 30 acquires detailed harmonics, interharmonics and subharmonics for effective troubleshooting of complex problems which are caused by these events.



Flicker

Starting up arc furnaces, big induction machines and other large loads which generate continuous current surges causes a mains disturbance event known as flicker. Flicker typically occurs in systems which are relatively smooth in comparison with the power required by the load, in combination with considerable, short-term current fluctuations. The MAVOWATT 30 acquires flicker which is perceived by the user as light fluctuation in accordance with IEC/EN 61000-4-15.

Mains Quality Monitoring

The MAVOWATT 30 was developed in compliance with the strictest mains quality standards including EN 50160, IEC 61000-4-30 class A and IEEE 1159. A statistical overview is generated in order to quickly check for adherence to international standards regarding supply power quality, and to evaluate mains quality. In no time at all, the MAVOWATT 30 provides a snapshot of more than 13 key parameters including asymmetry, voltage fluctuation and harmonics.

The Industry's Leading Software Tool for Mains Management

Dran-View® 6

Dran-View is a Windows based software package which makes it possible for mains quality experts to observe and analyze mains monitoring data quickly and easily. It's very easy to use, includes automated functionality and unites powerful analytical capabilities and adaptable options, in order to fulfill the requirements of each and every user. Dran-View is used successfully by thousands of customers around the world, and has evolved into the industry's leading mains management software tool.

- Intuitive, easy to handle user interface – delivers quick results, even for first-time users
- Optimized for speed and large volumes of data – fully exploits available computing power
- Measured and calculated parameters are sorted into various categories – easy searching for, and selection of, data
- Explanatory texts in several languages – supports graphic displays
- Simple dragging and zooming of diagrams with rotatable graphic axes – precise pinpointing of problems and quick help
- Flexibility throughout the entire package – adjustable, customer-specific appearance and performance

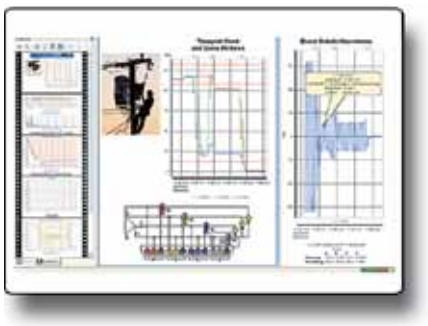
Evaluation

Automatic Evaluation

Simple wizards transform data into professional, easy to understand reports. Dran-View automatically detects the type of measurement, e.g. inrush current or errors recording, and selects the appropriate graphics and reports for distribution.

Individualized Reports

Diagrams, data lists and standards can be adapted to individual needs with more than 20 different report options. Options include fixed or user-defined time graphs, ITICs, worst-case summaries and more. It's even possible to enter one's own standards. A simple click identifies each report for future use.

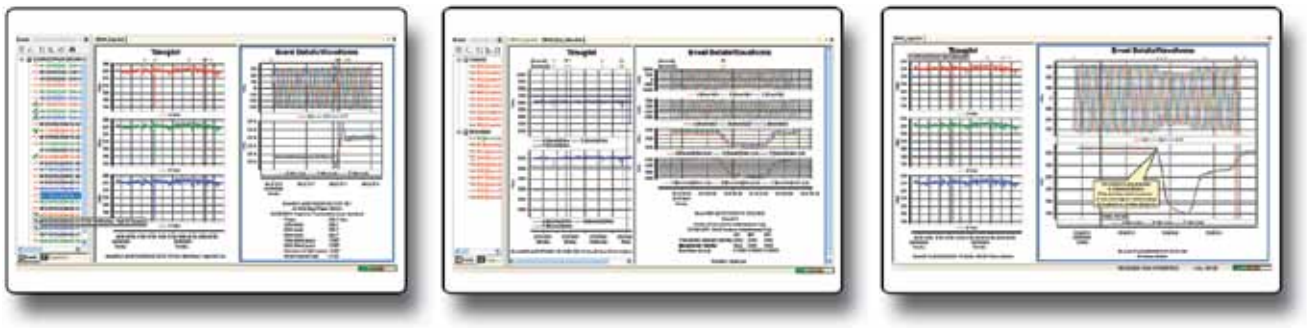


Editing Reports

Dran-View includes an integrated text editor by means of which images and texts can be easily inserted, events can be deleted, diagrams can be reorganized and report layout can be customized. The camera function in the Enterprise version makes it possible to insert photos, tables and waveforms into reports.

- Unique analysis support with simulator for harmonics and separate scaling of voltage, current and power harmonics
- Rescue kit for correcting time stamps, reversing the measuring probes, changing incorrect connection types and modifying scaling factors without having to gather data all over again.
- Export from any data source to PQDIF format (IEEE 1159.3), and Dran-View Enterprise can even import COMTRADE files from contactor relays
- Two versions: Pro for standard users and Enterprise for advanced experts

Visualization



Triple Windows

Events, time graphs and waveforms are displayed simultaneously and interactively for quick diagnosis of mains quality problems. If the mouse pointer is moved over an event, further details appear, or access to other channels is enabled.

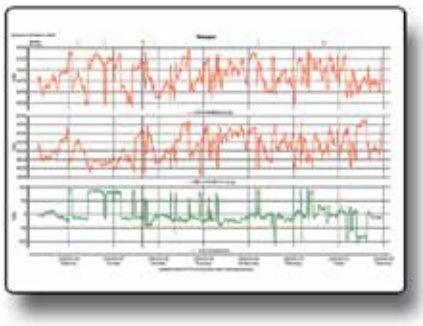
Comparing Locations

Dran-View Enterprise allows for simultaneous display of several different locations or instruments in a single diagram, allowing for comparison of different locations or times.

Customized Views

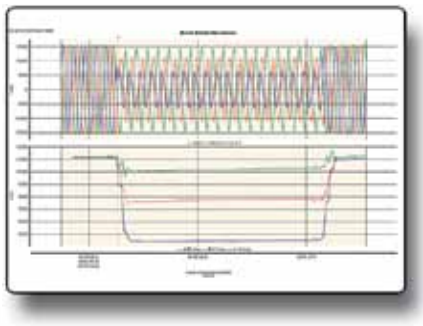
Diagram, object, range, location and other exclusive tools make it possible to put together graphics which have been customized for specific projects. More than 50 available options include zoom, drag&drop, range marking, harmonics scaling and removal of events.

Analysis



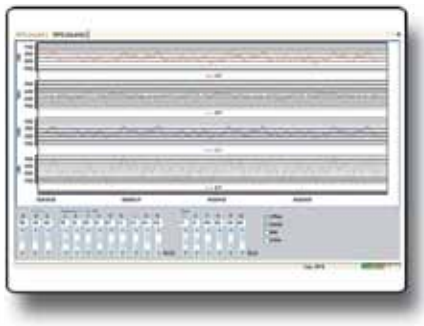
Categorized Events

The toolbar in the Dran-View work space not only categorizes all mains quality events, it can also display data chosen by means of filtering, selection, sorting, branching or user-specific searches. Formulas are even available for calculations between different measuring locations.



Various Data Formats

Any data source can be exported in PQDIF format in accordance with IEEE 1159. Even COMTRADE files for contactor relays and text tables with waveforms or trends can be read in with Dran-View Enterprise.



Harmonics Tools

In addition to the unique harmonics simulator, Dran-View now includes a calculator for harmonics and curve charts which calculates moving averages, harmonics, power and symmetry components.
It's the perfect tool for analyses which deal with starting up generators and making operations.

DRAN-VIEW® 6 PROFESSIONAL

- Simple user interface
- Super-fast file conversion
- Supports large data files
- Efficient data compression
- Rotatable axes in graphics, zoom, drag&drop etc.
- Unlimited undo/redo function
- Integrated text editor
- Measurement type dependent, automatic or user-specific reports generator
- Style sheets for uniform formatting
- Time, waveform, amplitude duration and DFT graphs
- Rescue kit (data repair)
- Separate scaling for voltage, current and power
- Automatic updates via the Internet

DRAN-VIEW® 6 ENTERPRISE – everything included in the PROFESSIONAL version plus:

- Displays and reports for multiple measuring locations – simultaneous presentation of numerous data sets
- Mathematical formulas for multiple measuring locations
- Advanced modules for generating reports
- Drag&drop user interface
- Individualized toolbars, menus and hot keys
- Data removal
- Texts fields allocated to data points in the diagrams
- Calculation of time graphs and harmonics from waveforms
- Insertion of figures and photos
- Import of COMTRADE files (incorporation of contactor relay data)
- Import of mains quality data from texts/tables
- Snapshots for printer queues or restoring a previous program status
- Improved DFT functions for selection and analysis of harmonics

Technical Data

Measured Parameters

- 4 differential voltage inputs, 1 to 600 V_{TRMS}, AC/DC, ± 0.1% rdg. ± 0.05% of the range, 256 samples per period, 16 bit ADC
- 4 inputs for current sensors, 0.1 to 6000 A_{TRMS} depending on sensor, AC/DC, 0.1% rdg. + CTs, 256 samples per period, 16 bit ADC
- Frequency range: 45 to 65 and 15 to 20 Hz
- Phase lock loop – standard PQ mode

Monitoring / Compliance

- EN50160 electrical supply quality / IEC 61000-4-30 class A / IEEE 1159
- Long-term monitoring / continuous data logging with min., max. and mean values

Mains Quality Trigger

- Period by period analysis
- RMS values in ½ period steps
- L-L, L-N, N-PE changes in RMS values: voltage dips, overvoltages, voltage interruptions
- RMS value recordings for voltage and current / waveform recordings
- 30 pre-cycles and 100 post-cycles
- Low and medium frequency voltage/current transients
- Parameters for evaluating harmonics
- Trigger link for voltage and current channels
- Characterization of RMS value events per IEC / EN 61000-4-30 or IEEE 1159

Distortion / Power / Energy

- W, VA, VAR, TPF, DPF, consumption, energy etc.
- THD / harmonic spectrum (U, I, P), interharmonics TID / interharmonic spectrum (U, I) up to 63rd per IEC / EN 61000-4-7
- Flicker Pst, Plt, floating Plt per IEC / EN 61000-4-15
- Crest factor, K factor, transformer derating factor, telephone interference factor
- Asymmetry (max. deviation from RMS values) and sequence components

Available Languages

- German ■ English ■ French ■ Italian ■ Spanish ■ Swedish ■ Finnish ■ Chinese (simplified) ■ Chinese (traditional)
- Japanese ■ Korean

General Technical Data

- Dimensions (H x W x T): 203 x 300 x 64 mm, weight: approx. 1.9 kg
- Operating temperature: 0 to +50° C, storage temperature: -20 to +55° C, atmospheric humidity: 10 to 90%, no condensation
- System clock with quartz movement, resolution: 1 second
- Power pack / charger: 90 to 264 V AC, 47 to 63 Hz
- Display: color LCD touch-screen
- Memory options (one is required): special compact flash card, 32 to 256 MB, interchangeable

MAVOWATT 30 Set 1	■ MAVOWATT 30 basic device ■ Measurement cable set ■ Battery + charger ■ Compact flash ■ Three TR-2500A current clamps (10 to 500 A) ■ Dran View Pro software ■ Carrying pouch ■ Condensed instructions (German) ■ Operating instructions (English)
MAVOWATT 30 Set 2	Same as set 1 but with: ■ Three TR-2510A current clamps (1 to 10 A)
MAVOWATT 30 Set 3	Same as set 1 but with: ■ Three DRANFLEX 3K24 current sensors (300 / 300 A) ■ RR/PS/4EU mains power pack

GOSSEN METRAWATT

GMC-I Messtechnik GmbH
Südwestpark 15 ▪ 90449 Nürnberg ▪ Germany
Phone: +49-911-8602-111 ▪ Fax: +49-911-8602-777

www.gossenmetrawatt.com ▪ info@gossenmetrawatt.com

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