



Grid Visualisation Software – GridVis®

Energy data management- & power quality monitoring systems



GridVis® software

An elementary module for energy management and power quality monitoring systems

In the field of energy management it is very important to be able to evaluate and process data measured for both energy usage and power quality. It should be possible to document all important data measured without interruption, in order to determine reasons for production problems, failures or quality deficiencies.

For example, time stamped data for harmonics, voltage fluctuations or black-outs facilitate the identification of root causes of possible production problems. With timely identification of poor power quality it is possible to take steps to avoid the increased wear or destruction of electrical distribution controls and operating equipment and even reduce the risk of fire. Through the analysis of load profiles and electrical loads it is possible to implement measures to improve energy

efficiency. Within the framework of energy management, targets can be defined for energy consumption, CO₂ emissions and energy costs. The new standard ISO 50001 has formulated a suitable framework of conditions for an operational energy management system.

When the energy management system has been chosen, Janitza software and hardware components provide the ability for you to view and document your energy supply.

Energy management systems help companies to optimise the use of energy – from purchasing right through to energy consumption – on a systematic, economical and ecological basis.

Customer benefits

- Reduction of energy costs
- In Germany, Energy tax relief from 2013 in conjunction with an EnMS
- Ability to view energy consumption in the individual departments
- Increase in supply reliability
- Environmental preservation (ecological thinking)
- Use of an optimised energy mix, optimisation of the energy contracts
- Greater awareness of employees with regard to energy efficiency and climate protection
- Cost centre management
- Cause-based assignment and accounting of energy costs



GridVis® software: Versions and applications

With GridVis®, Janitza offers user-friendly software for the configuration of an energy monitoring system and for monitoring power quality. The GridVis®-Basic software, included with all Janitza measurement devices, allows the programming and configuration of grid analysers, universal measuring devices, data loggers and power factor correction controllers. It also provides the means to read, save, display, process, analyse and evaluate the measured data.

GridVis® is a comprehensive and scalable software solution for energy suppliers, industrial applications, facility management, the property market and infrastructure projects.

With GridVis®, technical and commercial management can obtain the data that they require in order to identify energy saving potentials, reduce energy costs, take action to avoid production downtimes or to optimise the utilisation of operating equipment.

Main features

- Intuitive operation
- Configuration of the measurement system and the UMG measurement devices
- Measurement device management
- Automatic or manual measured data readouts from the devices
- Graphic presentation of online measurement values and historical data
- Ready-made PQ report templates, e.g. for EN50160 or EN 61000-2-4
- Alarm management and user administration
- Statistical evaluations
- Comprehensive export functions e.g. in an Excel file
- APPs management (customer-specific applications / programs)
- Storage of data in a database incl. database management (e.g. MySQL / MS SQL / Derby / Janitza DB)
- Topology views (configurable, graphic user interfaces with freely selectable register levels)
- Individually adjustable schedules (e.g. report generator)
- Use of virtual devices e.g. for totalling values from multiple devices or creating key-figures
- Generic modbus device for the integration of "non-Janitza devices"
- Report generators enable the setting and configuration of reports (energy costs and power quality)
- Exports and reports can be sent by e-mail

GridVis® licence model / software versions

GridVis® is a scalable software environment and is available in the following versions:	
GridVis®-Basic	Free basic version Included with the UMG measurement devices
GridVis®-Professional	As GridVis®-Basic, plus: <ul style="list-style-type: none"> • Automatic readout of the measurement devices • Virtual devices • MySQL / MS SQL database drivers Primarily developed for professional automated systems
GridVis®-Enterprise	Extended functions (principally for evaluation of data) Applicable mainly fo medium to large companies
GridVis®-Service	As GridVis®-Enterprise, plus: <ul style="list-style-type: none"> • Service (actively runs in the background for the automatic data readout) • Online logging of measured data • REST data interface (enables ready access to the stored values) • Alarmsystem • Exporte

*) For details on the versions refer to the table on page 23

Applications



Industry



Facility
management





Data centres



Infrastructure



Energy suppliers

Applications in the market segments: Industry, property market, data centres, infrastructure and energy suppliers	
 <p>Energy efficiency and energy costs</p>	Analysis of the energy consumption
	Cost allocation
	Optimisation of the energy consumption
	Load management
	Energy demand figures
	Reactive current compensation
 <p>Power quality and supply assurance</p>	Automation and control of the energy distribution
	Optimisation of the energy distribution
	Power quality analysis and maintenance
	Monitoring and trouble-shooting power quality events
	Alarms and event overview
Increase in system reliability	

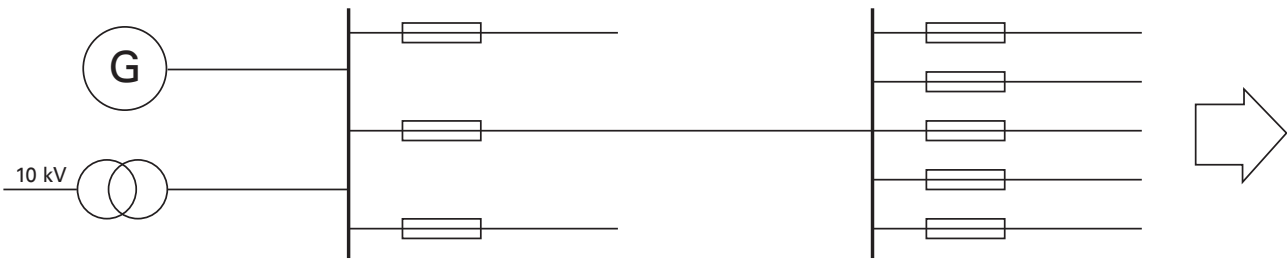
System architecture

When configuring monitoring systems it is advisable to apply the "pyramid approach" across three measurement levels.

Measurement level one refers to a few high end quality, class A measurement devices on the supply.

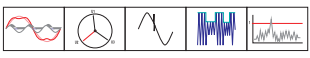
Master measurement devices are positioned in the subsequent stage at the main node points with event logging, Ethernet and Gateway functionality.

The third and final level shows basic meters or field bus devices in the distribution boxes, outlets or directly attached to the machine.



PCC / Power feeds and at site generation

- Meter for PQ analysis EN 50160
- Class A measurements IEC 61000-4-30
- Short interruptions and transient analysis
- Flicker and harmonic analysis up to 63rd
- Accuracy 0,1 U/I and 0,2 S for kWh



UMG 512 UMG 605

Switching equipment and main distribution cabinets (e.g. refrigeration,...)

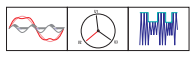
- Short interruptions and transient analysis
- Harmonic analysis up to 40th
- Accuracy 0,2 U/I and 0,2 / 0,5 S for kWh
- Modbus /TCP / IP gateway function integrated



UMG 508 UMG 604

Monitoring subfeeders, PFC, machinery level, lighting, tenants, and others

- Energy consumption, currents, voltages, load profiles, harmonics, ...
- High measurement accuracy
- Simple system integration



UMG 103 UMG 104 UMG 96RM

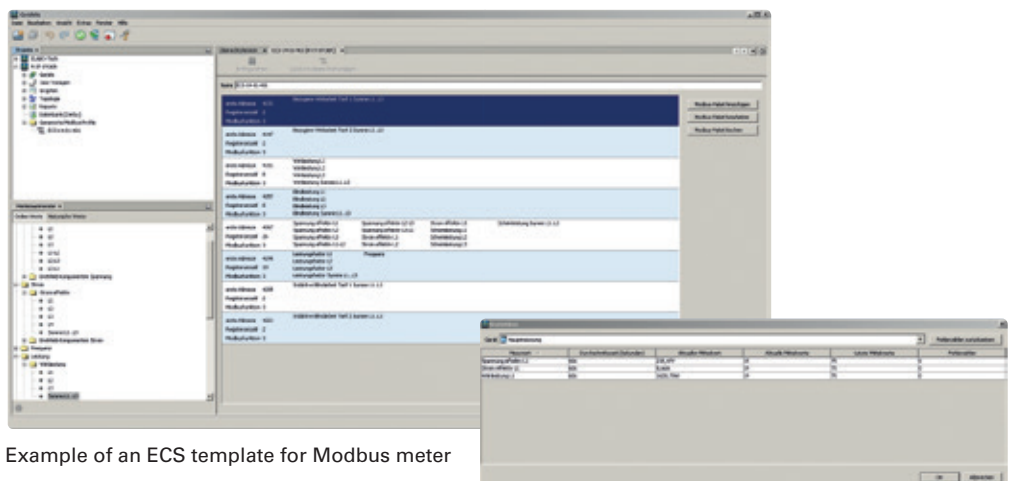
Generic modbus devices (Modbus RTU, Modbus TCP/IP)

GridVis® offers a range of options for the integration of 3rd party devices. The “generic modbus” function provides a simple integration option for “non-Janitz measurement devices” via Modbus RTU or Modbus TCP/IP. The external devices must support the modbus RTU protocol. The data formats must also comply with the modbus recommendation or with the available formats in GridVis®. The Modbus ASCII protocol is not supported by GridVis®.

The connection of external devices is achieved with a Modbus master UMG, via its RS485 connection or the value can be read out directly with GridVis® via Modbus TCP/IP, using Ethernet.

The external devices are integrated through profiles and managed in GridVis® as templates, which can subsequently be used multiple times per project. It is also possible to export a template. Profiles are created and edited directly in GridVis®.

The measured values read out from the external devices can be used in the topology view and in the GridVis® virtual devices. When using the GridVis®-Service version it is also possible to store the measured values online with mean value formulation. The measured values are cyclically polled here. It is possible to control the communication via an integrated statistics function.



Example of an ECS template for Modbus meter

Communication control via integrated statistics function

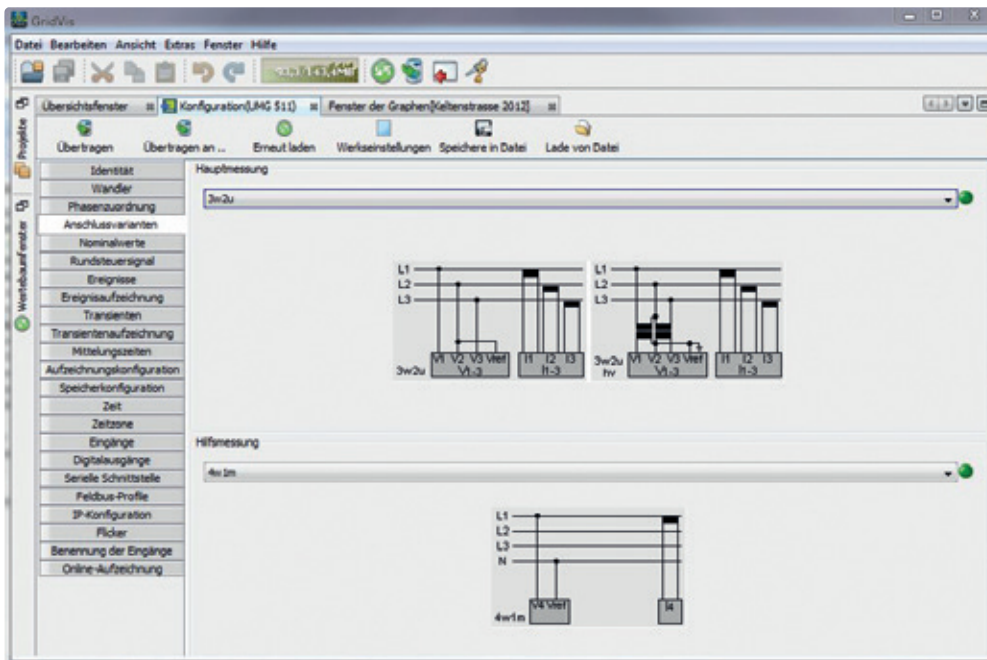
Overview of functions

- Data transfer speed 9.6, 19.2, 38.4, 57.6 ... 115.2 kbps
- Device integration via RS232, RS485, modbus (Ethernet)
- Supporting function codes: Read coil status (fc = 1), Read holding registers (fc = 3), Read input status (fc = 2), Read input registers (fc = 4) as well as the formats Floating Decimal Point (32 bit, 64 bit) each per IEEE 754 as Short (16 bit), Unsigned Short (16 bit), Integer (32 bit), Unsigned Integer (32 bit) and Integer (64 bit)
- Profiles are freely configurable
- Online storage of the values possible
- Values: Water, gas, heat, energy, etc.
- Export and import of the values possible
- Values are read in blocks



Device configuration

Setting parameters and configuration of measurement devices

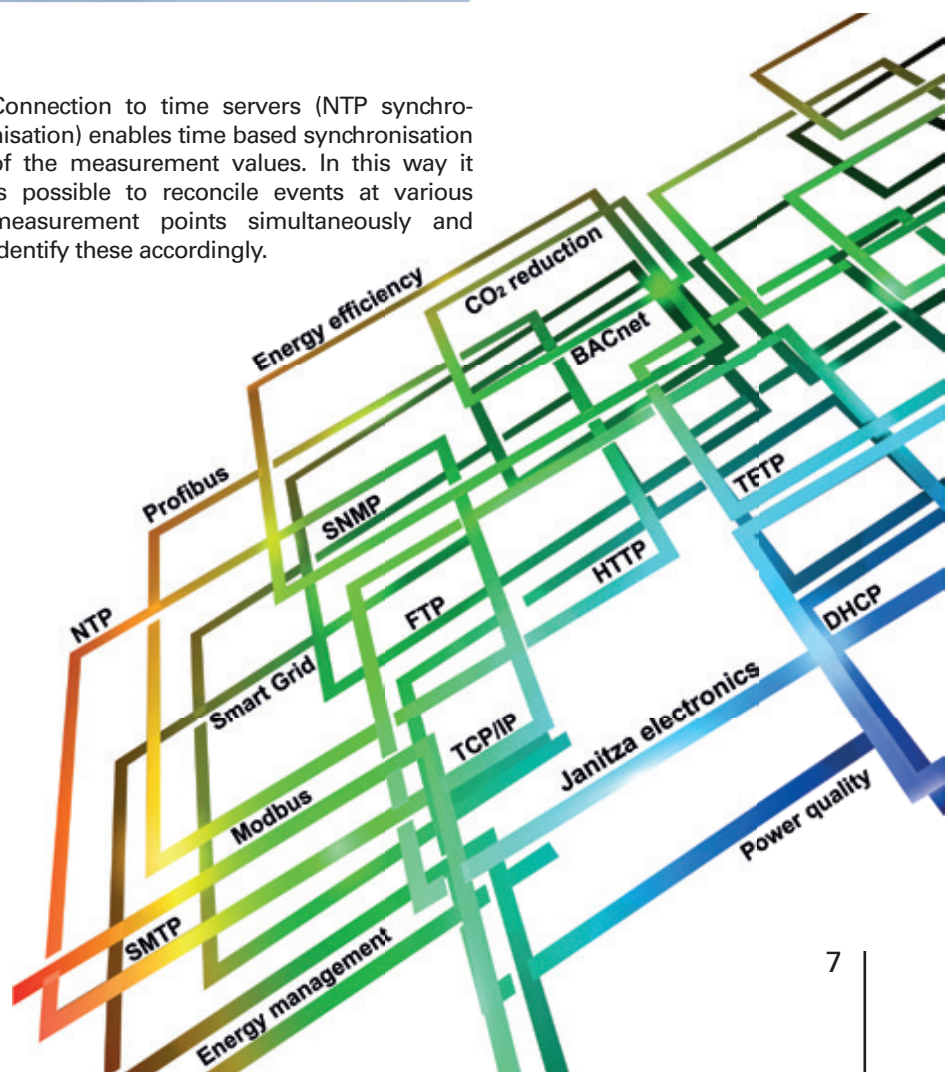


The user-friendly GridVis® software allows integration, and configuration of UMG measurement devices, their parameters can be set and comprehensive settings for custom solutions created.

Trigger values for the measurement of events and transients can be defined as well as the measurement values for storage together with storage intervals. It is possible to program the limit values for the monitoring function of the digital outputs, via comparators or determine pulse values for the digital inputs or outputs.

It is also possible to capture the readings of external temperature sensors for the transformer or ambient temperature.

Connection to time servers (NTP synchronisation) enables time based synchronisation of the measurement values. In this way it is possible to reconcile events at various measurement points simultaneously and identify these accordingly.



Topology views (visualisation)

The topology view provides a quick overview of the energy distribution system with the option of localising grid failures through a comparison of the individual measurement points and checking the defined tolerances at a glance.

It is quick and easy to create customer-specific solutions by storing graphic files (standard format JPG) with circuit diagrams, production lines or construction plans and integrating the associated measurement devices by means of "dragging and dropping" to their actual location.

Presentation of limit value overruns (e.g. THD-U too high) as well as input and output status is also possible. If parameters are above or below threshold limit values these can be highlighted by means of a change in colour.

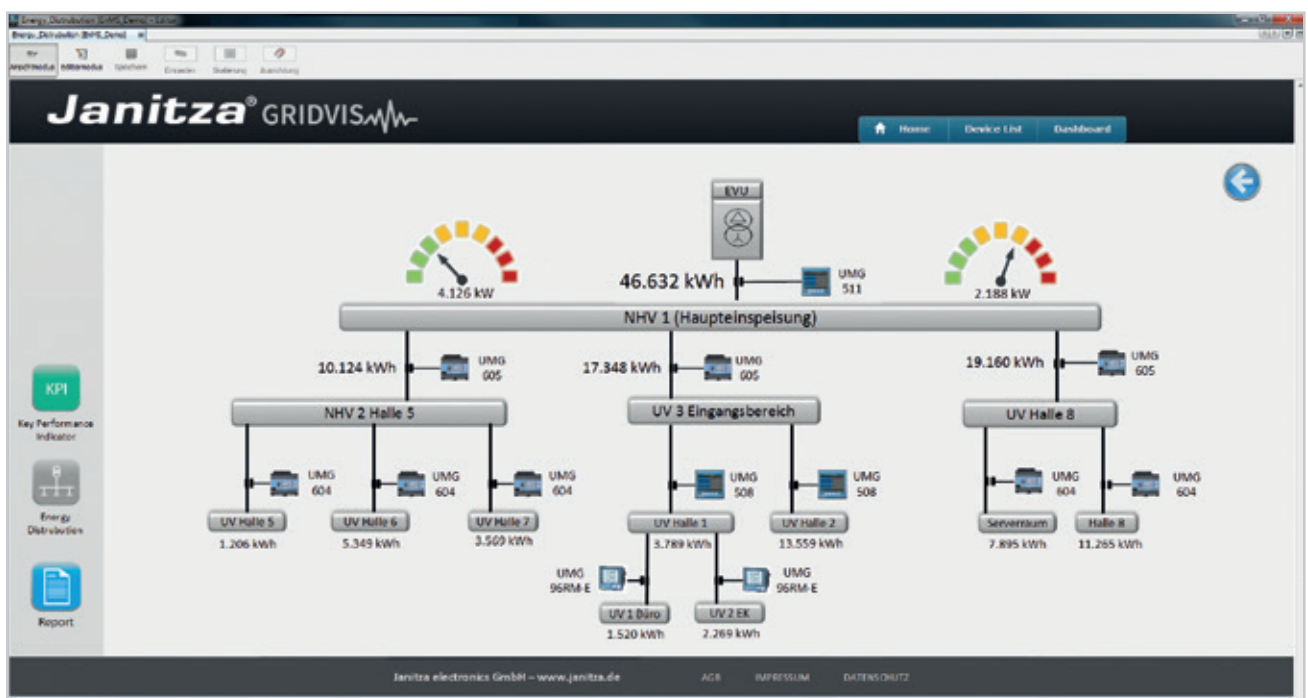
It is possible to call up a device view of every measurement device on the system which is online. This view is available directly via the actual display. Furthermore, in the case of some device types remote operation is also possible. All selected measured data for the devices can be presented online simultaneously.

Animation in the topology

Animations — such as a change of views between images — draw attention to important events. For example, through value-dependent display of images, a colour change can be shown when a rated voltage has been exceeded, a red light can be activated, or a circuit breaker can be marked as triggered.

Hyperlinks in the topology

Hyperlinks can also be integrated into the topology view. This allows linking of the URL to any website or to other topology pages. Through these, the user can call up documents or access calibration certificates, operation manuals and Excel evaluations. Even batch jobs or other programs can be launched by hyperlink.



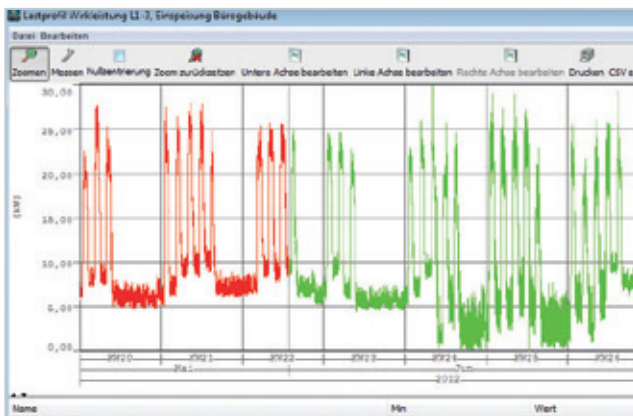
Online and historical measured values

Online data

Online data comprises all measured values that are captured by the measurement devices on a current basis during runtime and constitute the momentary ACTUAL status.

GridVis® enables specific logging, reading and display of online data. The data obtained from various measurement points is collected, stored, prepared, displayed and made available. All measured values are available in the online measurement mode, either as line graphs or bar charts.

The line graphs are always up-to-date with the oldest data being omitted dependent on the measured data quantity setting. It is possible to set two y scales for the measured data of two units, e.g. current and voltage, on a time-synchronous basis. An arbitrary quantity of measured data from multiple measurement devices can be presented on the same graph for each unit. The colours of the graphs can be selected and amended on an individual basis.



Display of active power L1-L3, load profile as basic instrument for energy management considerations



GridVis® screen with historical evaluations

Historical data

The measured values which are stored – either in the device or read out from the device and saved to a database – and made available in accordance with defined rules and averaging periods are referred to as historical data. Each stored value is given a unique time stamp and the respective device IDs are assigned. The data is stored in the database by parameter, year, month and day. The data can therefore be extracted on a selective basis.

Particularly interesting time frames can be enlarged with the zoom option and measured using the measurement function.

Presentation of the data in the form of bar charts, line graphs or histograms can be appended and printed out with headings and comments. The presentation of transients and events also takes place here in the transients or events browser. The flag browser offers the option to show missing measured data over certain periods, as well as untrustworthy measurement information. For example by analysing historical data it is possible to show load profiles, in order to produce precise requirement analyses for optimised current supply contracts. It is also possible to carry out fault analyses by comparing various parameters with just a few mouse clicks.

Reporting – Power Quality

(EN 50160, EN 61000-2-4, Nequal, IEEE 519, ITIC CBEMA, PQDIF, etc.)

The voltage in our electrical systems today is far from a pure sinusoidal shape. A wide range of “power quality distortion” types such as voltage interruptions, transients, harmonics, flicker and inrush currents alter the sinusoidal character of the currents and therefore also the voltage.

In some instances this results in damage to operating equipment, which is exposed to excessive electrical loads and may exhibit increased thermal losses. A loss of operating equipment or its restricted functionality may cause an associated production failure. A high flicker level can lead to fatigue and discomfort of personnel, whose capabilities are

affected. Unacceptably high currents in the protective earth conductor cause voltages in radiators, pipes, etc. Increased currents in underdimensioned neutral lines pose a significant fire hazard. It is therefore advantageous to detect power quality events in a timely manner, and to take corrective action. GridVis® offers all of the tools required for this. At the heart of the system analysis is the reporting system of the GridVis® software. This offers confirmation – at a glance – as to whether the power quality is adequate or not during the period under review. However, further tools are also available for analysis of the supply to help identify root causes of problems.

Funktionen im Überblick

- Power quality reports according to the following international standards
 - EN 50160
 - EN 61000-2-4
 - NeQual
 - IEEE 519
 - ITIC (CBEMA)
- (only online not automatic)
- Per schedule: Reports are produced according to time
- Manual reporting in case of specific requirements
- Automatic report creation
- Exports and reports by e-mail

Janitza®

Enhanced Power Quality Report

Customer

Name:

Company:


Location:

Tester

Name:

Company:

Start date: 22.07.2012 03:00
 End date: 29.07.2012 02:59
 Datum: 04.08.2012 19:45
 Software: GridVis



Measurement Point: UMG511
 UMG Serial Number: UMG511
 Device type: UMG511
 EN 61000-4-7 Class: Class 1
 EN 61000-4-30 Class: Class A
 Flicker: Supported
 Events: Supported
 Transients: Supported

Measurement Point: UMG511
 UMG Serial Number: UMG511
 Device type: UMG511
 EN 61000-4-7 Class: Class 1
 EN 61000-4-30 Class: Class A
 Flicker: Supported
 Events: Supported
 Transients: Supported

	Minimum	Maximum	Ergebnis
Voltage effective L1, L2, L3	212,64V	236,27V	Passed
Voltage effective L1	213,18V	240,77V	Passed
Voltage effective L2	208,06V	236,87V	Passed
Voltage effective L3	212,64V	236,27V	Passed
Current effective L1, L2, L3	21,94A	81,94A	
THD U L1, L2, L3	1,51%	4,85%	Passed
THD U L1	1,56%	4,43%	Passed
THD U L2	1,65%	4,44%	Passed
THD U L3	1,51%	4,85%	Passed
THD I L1, L2, L3	5,32%	16,65%	
THD I L1	4,05%	16,28%	
THD I L2	4,04%	20,30%	
THD I L3	5,32%	16,65%	
Active Power Sum L1-L3	16,81kW	50,50kW	
Reactive Power Sum L1-L3	-2907,20var	9749,24var	
Apparent Power Sum L1-L3	17,16kVA	51,04kVA	
cos phi(math.) Sum L1-L3	0,96	1,00	
Frequency +1%	49,83Hz	50,29Hz	Passed
Frequency -6%/+4%	49,83Hz	50,29Hz	Passed
Unbalance Voltage	0,08%	0,89%	Passed
Long term flicker L1 (Limit: 1.0)	0,56	1,71	Failed

Enhanced Power Quality Report

Reporting – Energy management systems

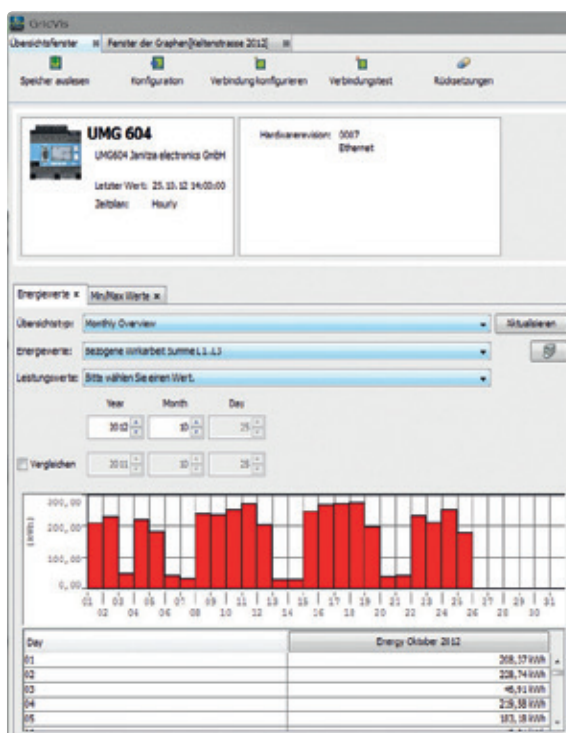
Within the framework of an energy analysis it is necessary to measure and monitor important parameters of the electrical energy supply. The data supplied from the measurement devices is displayed in GridVis® online as momentary values or from the historical values.

The evaluation of this data can take place via the report generator integrated into GridVis®.

The reports can consolidate a range of information depending on the requirements and settings. For example

energy and power-related cost centre reports can be created. This not only facilitates the presentation of electrical energy values from the measurement devices but also allows evaluation of other media (gas, water, etc). Furthermore, load profile analyses, which are based on a defined time frame, provide an overview of peak demand consumption.

The generation of individual reports can either be automatic via freely definable schedules or can be started manually by the user as a printable report or as an HTML, XML, Excel, Word or PDF file.



Consumption profile – monthly view

Overview of functions

- Energy consumption / power requirement / cost centre reports
- Load profile analyses
- Automatic report generation
- Freely definable schedules
- Exports and reports by e-mail

Excel export

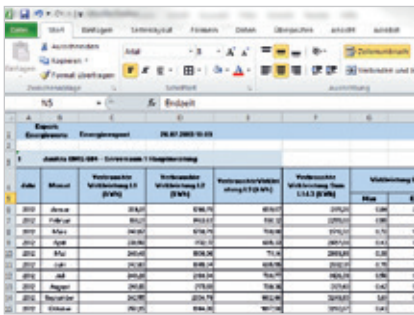
Manually and automatically via time plans

GridVis® can process multi-sheet Excel documents and fill them with data. This gives the user plenty of freedom to select clean measurement data, pre-calculated data (on energy), or time ranges, for example.

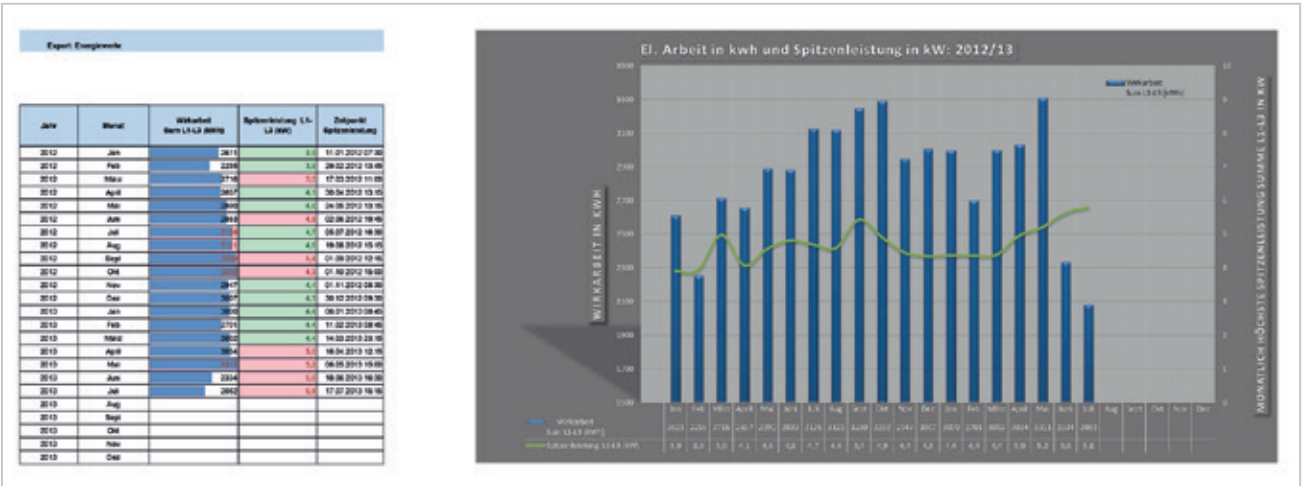
Measurement data can be exported to Excel documents both manually and automatically on a schedule.

For this, three options are available: overwrite existing data, create new data with date or change existing data.

In this way, GridVis® provides user-friendly, customer specific evaluation.



Exported data from GridVis® in an Excel file



Customer-specific Excel evaluation for el. power and energy based on the automatic Excel report

Janitza DB

Since GridVis® release # 4.1, the Janitza database “Janitza DB” has been in use. It is specially optimized for GridVis®. This database can be selected while setting up a new project and works extremely fast.

Data can be exchanged with other software platforms, home pages etc. through the REST interface (see page 22).

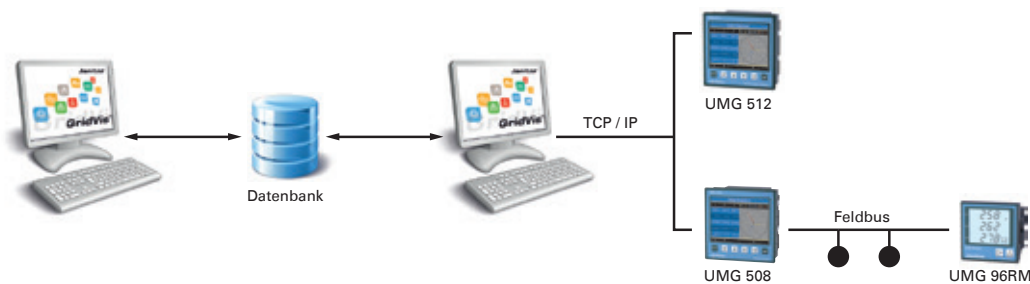
Janitza DB is delivered with all editions of GridVis® to save the user additional

expense. This also applies indirectly to work time, since no additional installation time is needed.

Note: It is not possible for multiple clients to access the Janitza DB! Only one computer or server can connect a GridVis® desktop or GridVis® service to a single Janitza DB.

Database management

Database connection in GridVis® Desktop and Service



GridVis®-Desktop

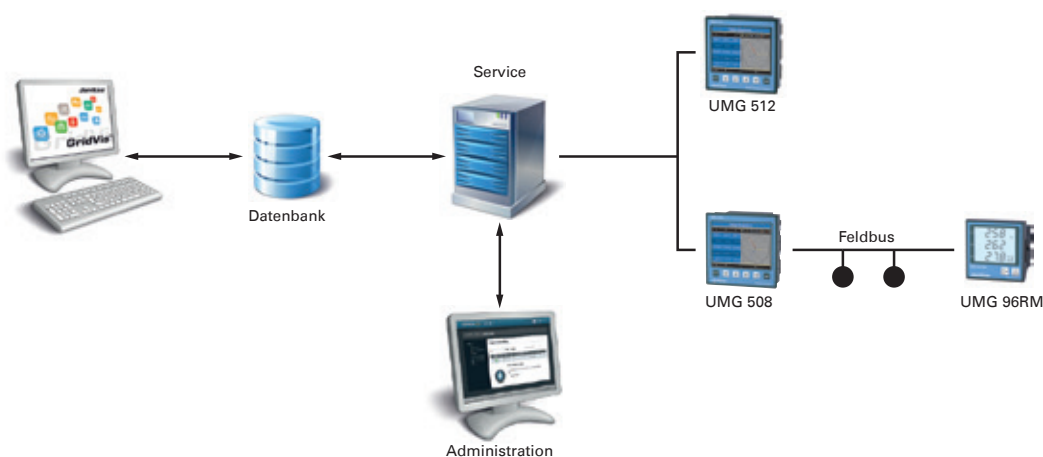
Almost every measurement device is equipped with an integrated data storage facility. When this memory is read out, the measured data is backed up to a database. Apache Derby, MySQL and MS SQL databases can be selected. In the case of projects with 5 devices or more we recommend the use of an SQL database.

The possible installation software versions are GridVis®-Desktop, GridVis®-Service and a mix of GridVis®-Desktop / GridVis®-Service.

GridVis®-Desktop can be installed locally on a desktop or centrally on a virtual machine. When reading out data from the measurement devices GridVis® must run as an open, active program. From here it is possible to address, read from or configure devices. All generated data is written to the database associated with the respective GridVis® project.

GridVis®-Service functions in the same way via a system service on a remote server. As servers are rarely switched off, this system service can read out data from the measurement devices on a constant basis in the background, without GridVis® being open on a client computer. This type of service installation can be used by multiple clients in parallel. The configuration of devices and projects takes place via the GridVis®-Desktop program interface. The rights for the devices are subsequently handed over to the GridVis®-Service. This can be configured via a browser. All graphic and statistical evaluations continue to take place via the GridVis®-Desktop.

In general it is possible for any number of GridVis®-Desktop and Service instances to access one and the same database (with the exception of Apache Derby). However, a device, at any one time can be linked only to one GridVis® or one GridVis®-Service.



GridVis®-Service

Easy data exchange

Due to numerous interfaces and protocols (e.g. Modbus / Profibus / M-Bus), an uncomplicated system connection (energy management system, PLC, SCADA, GLT) is ensured.

In general terms all energy measurement devices can now be networked with each other. Communication between GridVis® and the measurement devices takes place via Modbus RTU or Modbus TCP. Measured data is read out automatically via a field bus and made available for further use via a central data server.

To keep installation costs low (e.g. peripherals for field buses), Ethernet TCP/IP is used increasingly frequently as the backbone of the data communication. Through connection to an existing Ethernet architecture, fast, cost-optimised and reliable communication is usually guaranteed.

Janitza systems essentially offer an extremely open architecture so the Modbus addresses can be accessed directly

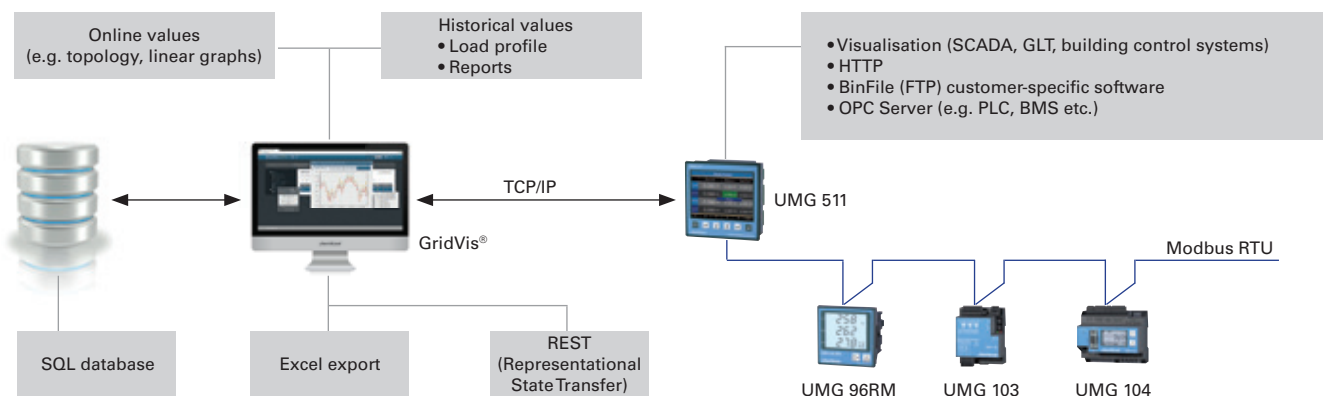
using PLC, BMS or SCADA software, or alternatively the UMGs can be integrated in a PLC environment via Profibus.

The BACnet protocol plays a significant role in the field of building automation. "BACnet" is a manufacturer-independent data transfer protocol for "open communication" in building automation systems for regulation and control of equipment used within this field.

"BACnet" facilitates communication between equipment in various systems from a range of manufacturers.

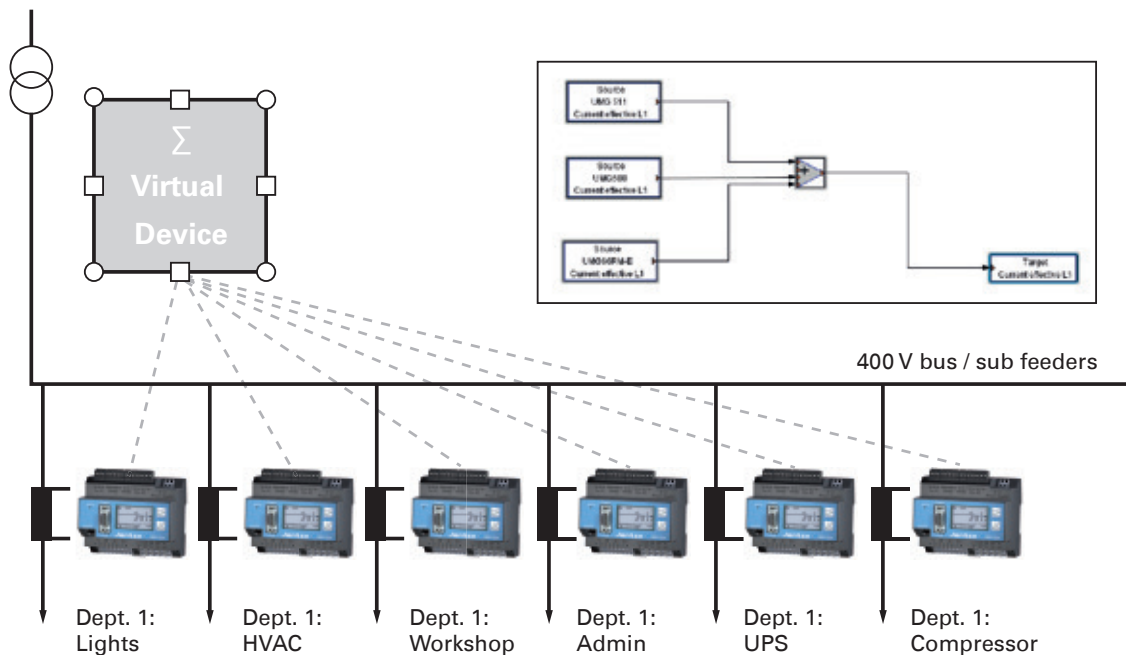
Data exchange options:

- GridVis® software
- UMG device home page
- SQL DB queries
- REST interface
- EXCEL export
- UMG Modbus addresses read directly
- OPC server
- BinFiles over FTP



Overview of the multifaceted integration options to superordinate software environments

Virtual measurement devices (cost centres, key figures)



The virtual measurement device calculates the total consumption in the supply line

“Virtual measurement devices” are available with GridVis® for the purpose of mathematical calculations.

Through the addition of various measurement points it is possible to consolidate entire areas. This function is a useful application in particular for cost centre management.

A further application area is the calculation of key figures. For example, in order to evaluate the energy efficiency in computer centres the calculation of power usage effectiveness (PUE) would be useful. In such calculations the total energy consumed in the computer centre is presented in comparison to the energy consumption of the computers.

Virtual measurement devices can calculate the momentary as well as the historical value where the pertinent basic data exists. The following operations are possible: Addition, division, multiplication and subtraction.

With the aid of numerical constants it is also possible to calculate percentage values. A major advantage of the GridVis® virtual measurement devices is that no additional measured values are stored in the database. Virtual measurement devices carry out calculations during the GridVis® runtime. For the purpose of the graphic display it gains direct access to the source data of the device, calculates the value and displays this in the graphic. Up-to-date measured values from virtual measurement devices are also calculated during the GridVis® runtime.

A range of target data points are available for calculations with non-electrical media. A data logger such as ProData can serve here as a source of these media. The integration of external devices via the generic modbus option of GridVis® is also possible (it may be necessary to carry out an integration test in this case). It is optionally possible to process the measured values of global variables from the measurement devices in the virtual devices.

Jasic and graphic programming

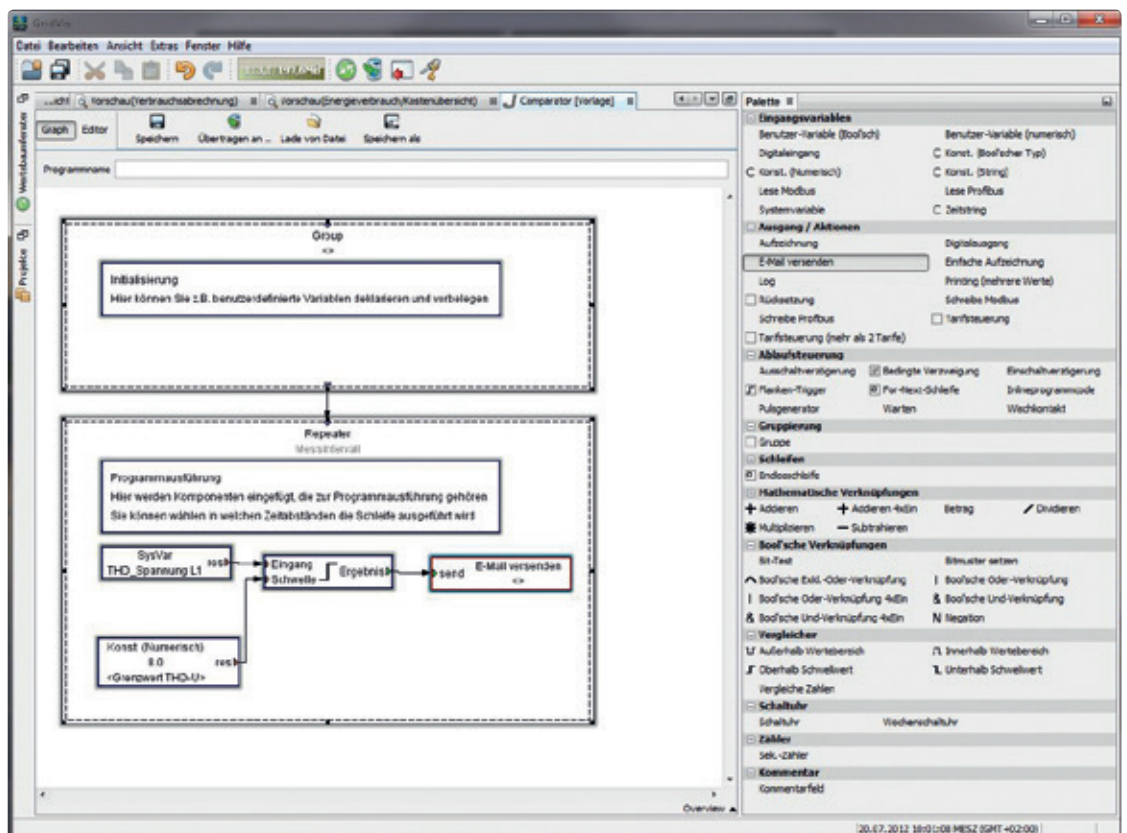
Unlimited programming options

The programming language Jasic® opens up a range of new options. One is no longer bound to the functions specifically integrated in the device alone, but can expand the device to include additional individual functions. The graphic programming allows the generation and configuration of logical links or mathematical functions. It is also possible to describe one's own digital outputs and evaluate digital inputs. Furthermore, the registers of external devices can be analysed and defined via Modbus (licence required).

Messages can be sent via email if limit values are exceeded. Time switching functions or the logging of special values can

be freely configured by means of the graphic programming. The programs, once created, are stored directly in the respective UMG measurement device and run here autonomously.

The possibility of the graphic programming of application programs constitutes a true novelty in the field of power analysers. In addition to the user-friendly graphic programming, the user is also able to program the code directly, via Jasic source code.



The functional overview offers a wide range of functions, in order to implement graphic program with ease

Analysis of power quality

In parallel with energy monitoring GridVis® also places a principle focus on monitoring the power quality.

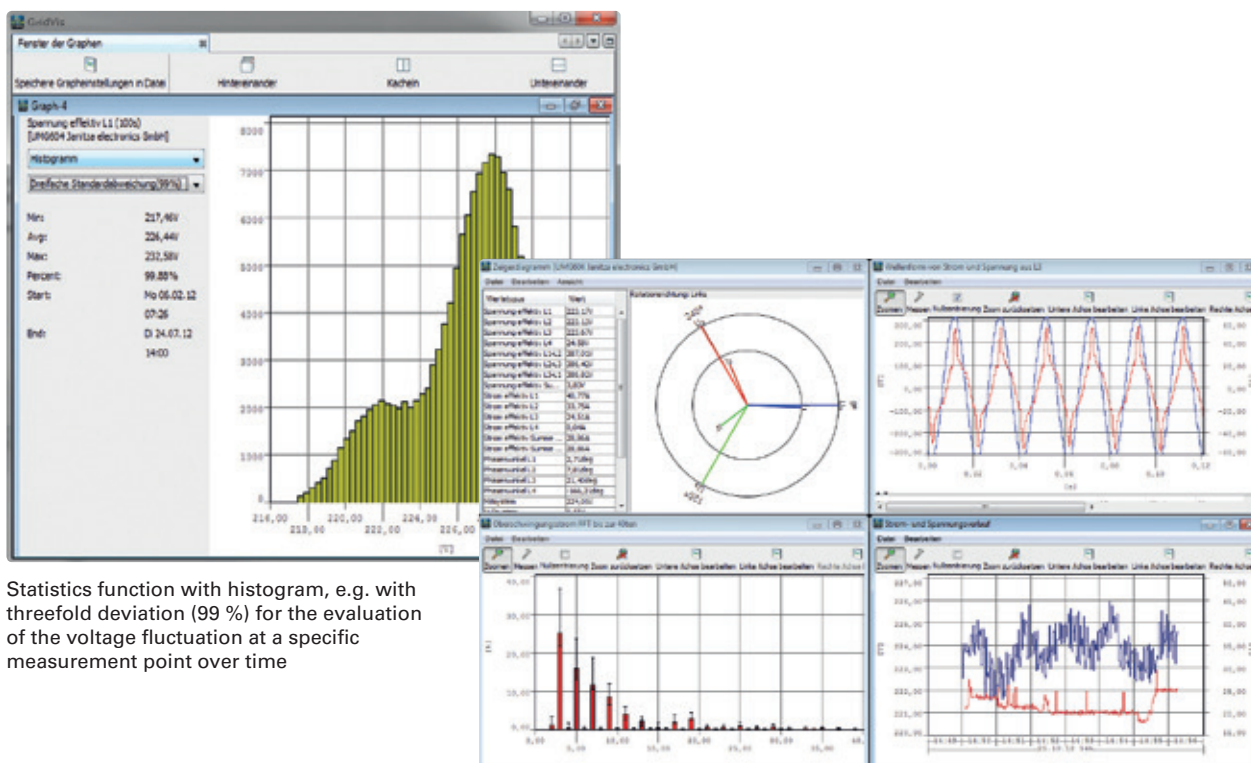
The threshold values are issued to the measurement device via GridVis®. System events such as overvoltage, undervoltage, short-term interruptions, overcurrent and transients are accordingly automatically logged with preset cycles before and after the event. Preconfigured parameter lists are available for logging in accordance with EN 50160 and EN 61000-2-4. The power

quality is negatively affected by the increasing number of non-linear loads. On the other hand "mains feedback," caused by the trend towards decentralised energy generation and the reduced mains short circuit power frequently associated with it, has a greater effect – mains feedback!

Continuity of supply, system assurance, supply reliability, service and in particular power quality are of primary importance to the customer.

GridVis® delivers a range of features for the analysis of power quality:

- Oscilloscope function of the live values of numerous power quality parameters
- Topology view, with limit value monitoring of online values
- Transients and event overview in the measurement device dashboard
- Graph sets with freely selectable measurement parameters
- Automatic generation of PQ reports according to schedule
- PQ reports for diverse standards: Ne-Qual, EN 50160, EN 61000-2-4, IEEE 519
- Comprehensive statistics functions
- ITIC (CBEMA) curve
- Event browser via lists and graphic presentation for detailed analysis
- Transients browser via lists and graphic presentation for detailed analysis



Statistics function with histogram, e.g. with threefold deviation (99 %) for the evaluation of the voltage fluctuation at a specific measurement point over time

Graph set with freely selectable PQ values

Events and transients

The costs of voltage dips (sags) and transients are commonly underestimated!

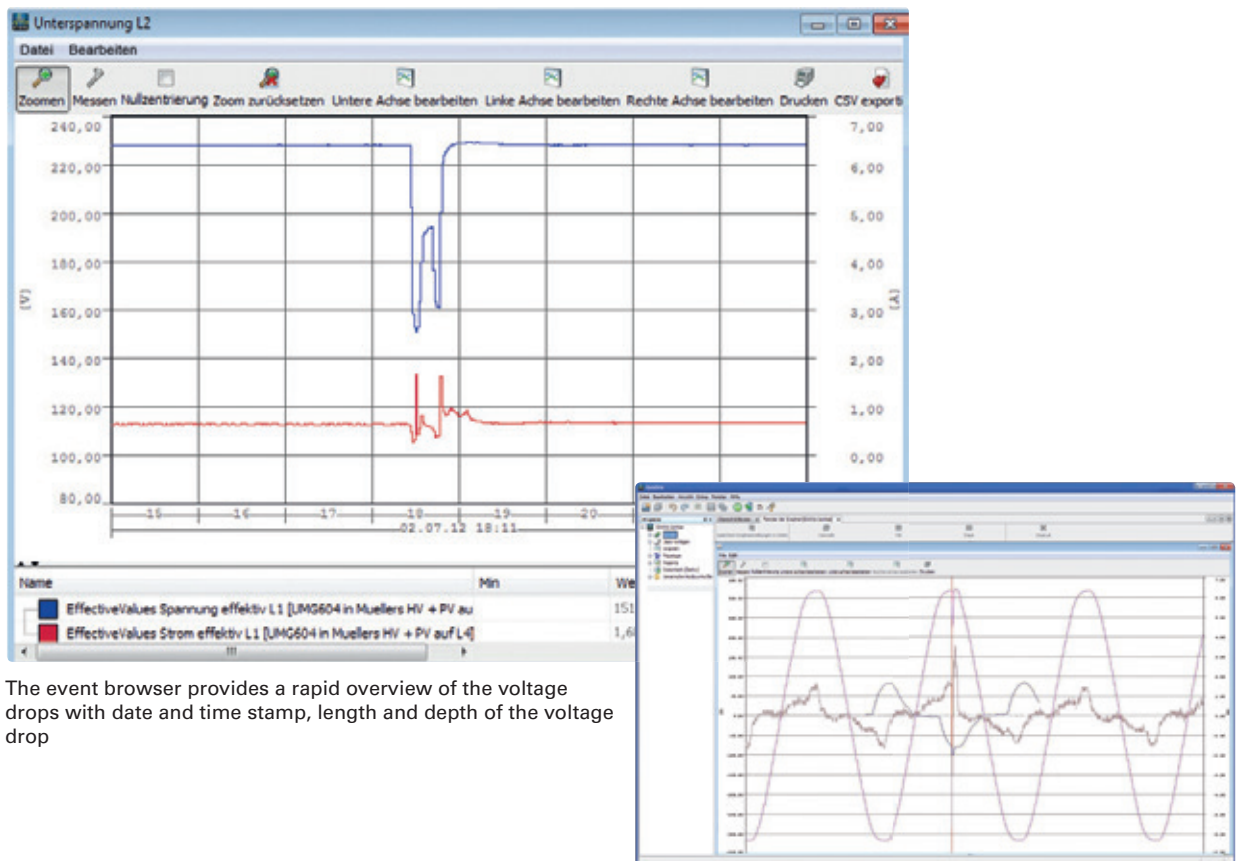
Events refer to short-term voltage peaks, dips or short-term interruptions, e.g. due to bird strike or a short circuit caused by construction works.

Voltage dips and short-term interruptions can cause major problems. Especially in production and in critical processes, this can result in quality problems and production downtimes. The financial effects of such voltage drips are commonly underestimated.

Short-term interruptions usually incur immediate, often with considerable costs.

It is therefore important to identify and analyse the cause of such power quality fluctuations with user-friendly tools.

With the event and transients browser, GridVis® offers helpful tools through which to ascertain and classify diverse events on the supply system. In both procedures the list view reports on the event data. From the list it is possible to call up the respective graph, zoom in or out, print it or export it to a PDF or CSV file. GridVis® optimally utilizes the device capacity. As such, events from a duration of 10 ms and transients from 50 µs can be reliably logged and further processed.



The event browser provides a rapid overview of the voltage drops with date and time stamp, length and depth of the voltage drop

Detailed analysis of a critical voltage drop

User management

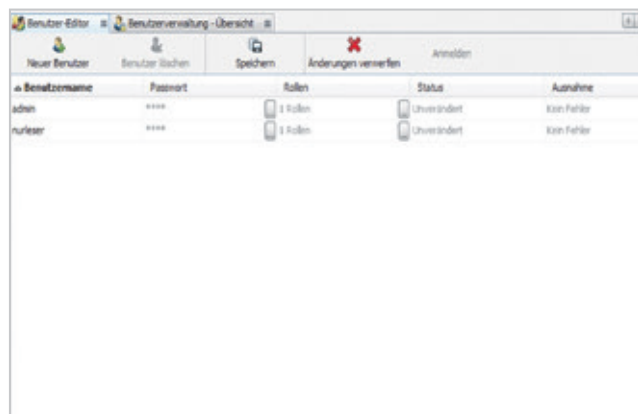
Multifaceted user profiles

Typically, a user (Admin) is defined, who has no restrictions with in the GridVis®. Among other things, the administrator can manage users and add or delete devices/topologies etc. Permits the specific assignment and deletion of each user's rights. Defined access authorisations can be assigned through the rights. This function is also used for setting up users, granting rights and assigning users to groups. User administration can be arranged and set as an active function within a project. Only one user administration can be defined

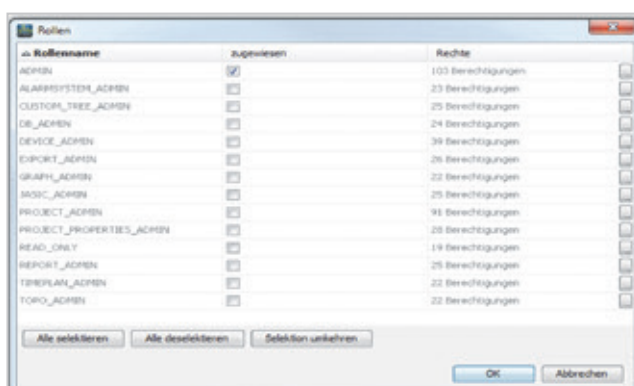
per project. All users, passwords, roles and rights are held in one database (a user directory). Multiple projects can be protected from a user directory. Users' individual rights are compiled in predefined roles (groups of rights). Roles (groups of rights) are cumulative, i.e. the rights of users from various roles are added together. If a project is protected by user administration, login is required for access. In GridVis® 4.0 and above, all editions except GridVis®-Basic offer user administration within the software.



User administration overview



User editor



Assignment of roles

Alarm management

Intelligent alarm management system

Alarms are defined as events that require an immediate reaction from the energy manager responsible or from the operation supervisor. Systematic management of alarms is indispensable in monitoring energy and power quality. For this, GridVis® #4.2 and above (Service edition) offers powerful alarm management for monitoring all measurement parameters of UMG measuring devices. It allows rapid, reliable signalling of fault conditions (e.g.

disconnected communications equipment between measurement devices and measurement data servers, measured value exceedances, etc.)

Immediate, fully automatic fault reporting can be transmitted through various channels to a multitude of different recipients. Various options allow customization to the operator's needs.

Erzeugt	Aktualisiert	Name	Eskalationsstufe	Quittiert	Zurück zu normal
27.01.14 13:25:26937	27.01.14 13:46:09783	Spannungsüberwachung	1	--	Zurück zum Normalzustand
27.01.14 12:03:48539	27.01.14 12:04:18644	Unterspannung	2	--	Zurück zum Normalzustand
27.01.14 11:54:18644	27.01.14 12:03:48539	Unterspannung	1	--	Zurück zum Normalzustand
27.01.14 11:51:00992	27.01.14 11:54:18644	Spannungsüberwachung	1	--	Zurück zum Normalzustand
27.01.14 11:50:49147	27.01.14 11:51:00992	Unterspannungsemail	0	--	Offen
27.01.14 11:00:35455	27.01.14 11:50:49147	Unterspannung	1	--	Zurück zum Normalzustand
27.01.14 10:46:09783	27.01.14 11:00:35455	Spannungsüberwachung	1	--	Zurück zum Normalzustand
27.01.14 10:41:53302	27.01.14 10:46:09783	Spannungsüberwachung	1	--	Zurück zum Normalzustand
27.01.14 10:38:53366	27.01.14 10:41:53302	Spannungsüberwachung	1	--	Zurück zum Normalzustand

No reports are lost

The GridVis® alarm management system offers user-friendly administration of employees and supervisors. This includes acknowledgement functions and escalation management. It means that if there is no response, another employee is informed. If the second person does not react, a third is informed, etc. Their order can be configured individually. A logbook function provides the user with a list of open and acknowledged alarms. Sorting and filter functions ease evaluation.

Effective monitoring options

With the GridVis® alarm management system, both current (online) and historical threshold values can be monitored (absolute data, consumption data over time, etc.). Monitoring can even include availability of measuring points (UMGs) and the last time data were synchronized.

If there is an alarm, a number of actions can be triggered: Starting a program (such as text message, Twitter, Modbus address, etc.), sending e-mails (text, alarm information), manual and automatic acknowledgement functions, pop-up windows and sound.

More protection against technical hazards

Targeted escalation management guarantees prompt intervention when faults or critical situations occur. If there is no acknowledgement, the alarm is escalated after a defined time. Any number of escalation levels is possible. This helps operating personnel with troubleshooting.

Helps operating personnel with troubleshooting

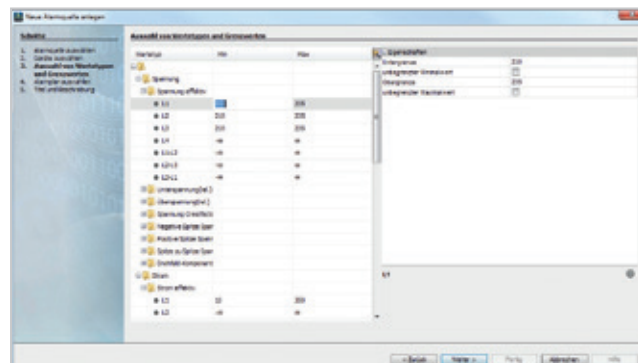
A professional alarm management system can...

...increase the availability and performance of a monitoring system, reduce the cost of energy and operation, and increase security of supply.

Demands	Measures
Timely	Checking of data and threshold values
Relevant	Deletion of alarms without user activity
Unambiguous	Assure the controllability of alarm rates
Prioritises	Grouping of alarms with the same user activity
Understandable	Provision of clear message texts
Informative	Provision of assistance
Sustainability	Escalation of alarm messages in the event of fault not being rectified in good time



Alarm plan configuration



Configuration of alarm sources, selection of value types and threshold values

REST interface via GridVis®-Service

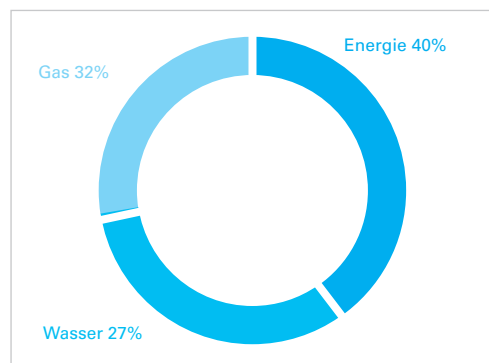
Online and historical data are supported

The REST interface (Representational State Transfer) describes a standardised request for measured variables or other information through a URL address. The extraordinarily fast interface allows data to be integrated directly into GridVis® or from GridVis® into other systems. GridVis® has very open system architecture that allows measurement data to be integrated through various paths into external software.

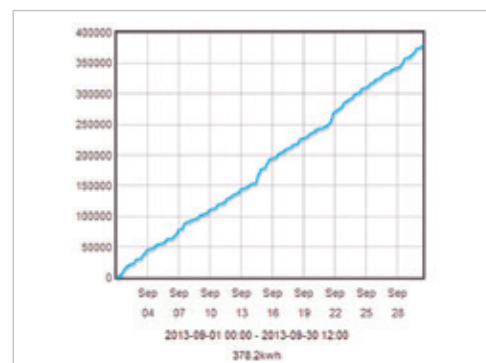
The result of the URL query is page content in JSON/XML with the requested measurement values or information. This is supported both for online and historical data.

The REST interface is extremely useful for integration of measurement data in proprietary software solutions, visualizations and home pages. This allows fast, easy calculation of energy data and further processing of data, such as for creating indicators.

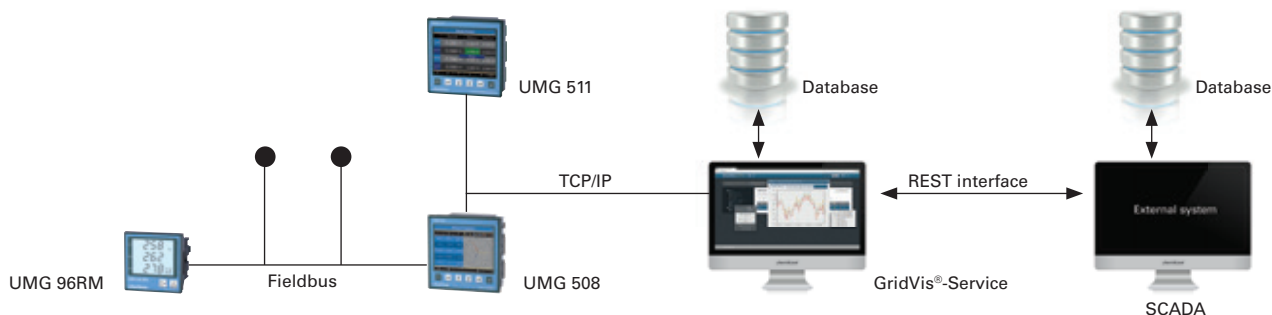
Note: The REST interface is available only with the GridVis® Service edition.



Cost distribution



Graphical display of the energy values via the REST interface from GridVis®



Data transfer between GridVis®-Service and an external SCADA system via the REST interface

Software variants

Description	Basic	Professional	Enterprise	Service
Installations (Desktop)	1	3	5	5
Installations (Service / WEB)	0	0	0	2
Number of devices	5	Unlimited	Unlimited	Unlimited
Update time frame	Unlimited	1 year	1 year	1 year
Telephone support	Unlimited	Unlimited	Unlimited	Unlimited
Graphs	•	•	•	•*2
Database Janitza DB / Derby	•	•	•	•
Manual reports	•	•	•	•*2
Graphic programming	•	•	•	•*2
Topology	•	•	•	•*2
Database support MS-SQL / MySQL*1	-	•	•	•
User management	-	•	•	•
Automatic reading	-	•	•	•
Virtual measurement device	-	•	•	•
Manual entry of data / indicators	-	•	•	•
Automatic CSV export	-	-	•	•*2
Generic modbus	-	-	•	•
Graphic programming module (write / read modbus)	-	-	•	•*2
Automatic reports	-	-	•	•*2
Online recording	-	-	-	•
Service	-	-	-	•
REST interface	-	-	-	•
Alarm management	-	-	-	•
Article number	51.00.116	51.00.160	51.00.170	51.00.180
Article number / update extension per year	-	51.00.161	51.00.171	51.00.181
Article number / upgrade to next higher suite	-	-	51.00.162	51.00.172

*1 SQL database itself is not included in the scope of deliverables.

*2 This function is only available in conjunction with GridVis® installation on the desktop.

Number of devices:	Max. number of simultaneously loaded devices (e.g. within the basic version: a project with 5 devices or 5 projects with one device).
Update interval:	Time period in which new GridVis® versions can be installed free of charge.
Automatic reading:	Device read-out in accordance with freely configurable time plans.
Virtual measurement device:	Formulation of cost centres, key figures, etc,
Generic Modbus:	Integration of "Non-Janitza devices".
Online logging:	Measured data from devices without onboard data memory is logged in the GridVis® software.
Service:	The GridVis® software runs in the background and will be started automatically on the data server without any user log-in and will save the data from the devices. GridVis®-Enterprise is included in the package and will be required for configuration and data processing.



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