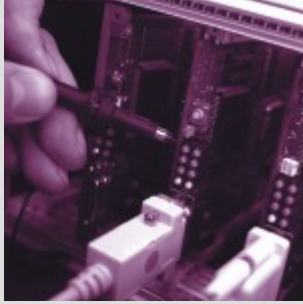


EPPE



EPPE
Power Quality Analysers

Power Quality Analysers of the EPPE Series

System Description

The power quality analysers of the EPPE series have been developed to continuously and fully automatically record and monitor all the parameters necessary for the assessment of power quality.

One of the fundamental ideas behind the EPPE concept is to combine the operational reliability and real-time capabilities of specialist hardware with the manifold possibilities and the convenience of PC-based software. As a result, configuration, display and analysis are all fully PC-supported. At data acquisition level all the measuring instruments can be operated with or without a PC.

EPPE measuring systems are available in desktop format, as devices for cabinet installation, or in a portable housing with an integrated analysis unit and a large TFT display with touch screen.

A high degree of system integration, the utilisation of the la-

test *32/128 bit DSP technology* and the innovative data concept allow very long recording periods without forfeiting the comprehensiveness of the acquisition process or the high levels of accuracy, despite the small dimensions of the housing.

The galvanic separation of the measurement inputs using linear opto-couplers (*LOC technology*) guarantees the very highest levels of accuracy and an absolutely linear frequency response. If required, verification can be provided in the form of a DKD-certified calibration.

Integral DCF and GPS modules provide a defined time base and allow the precise synchronization of several EPPE measuring instruments.

For the purposes of configuration and the transmission of measured values, the power quality analysers of the EPPE series can be linked to local or remote PCs by means of serial, network or modem connections.



Not only the reliability of supply, but also the quality of electrical power is of prime importance for the smooth operation of high-technology plants in the areas of industry, medicine and electronic data processing.

For this reason power quality is increasingly being brought into play as one of a number of key price criteria. In recent times this trend has gained considerably in importance due to the liberalisation of international electricity markets.

It is therefore imperative for both energy providers and end users to monitor and log power quality constantly.

The need to record a very large number of electrical parameters exactly, simultaneously and continuously over sometimes very long time periods calls for an extremely sophisticated measurement technology solution.

At the same time a power quality measuring system must provide convenient, automated tools to support the user in assessing the measured parameters in relation to a wide variety of national standards.





EPPE

Continuous Monitoring

Operating Principle

The measurement systems of the EPPE product range continuously capture the measured values of all voltage and current channels thus making it possible to analyse and document power quality in accordance with either individually defined or internationally recognised standards such as EN 50160 or IEC 61000. The four voltage and four current channels enable any three or four-wire system to be monitored comprehensively.

As well as continuously recording all the quantities relevant to power quality, the integral disturbance recorder module offers the fault-triggered capture of transient events. Sample rates of up to 30 kHz are possible in this connection. The fault locator simplifies the location of disturbances.

A large number of additional electrical quantities are constantly calculated on the basis of the quantities measured at the analog inputs. In addition to the pure power quantities, the analysis includes all the parameters necessary for the evaluation of harmonics, inter-

harmonics and flicker.

Freely definable storage profiles allow any of the many parameters available in real time to be saved in the internal long-term data memory of the measuring unit. The large memory capacity and effective compression methods allow long-term recordings of up to several months even in stand-alone mode. This means that the systems of the EPPE series can be used as powerful data loggers even without further analysis.

For the purposes of evaluation, data which has been saved can be accessed at any time by the integral PC or by a local PC connected to the measuring instrument. Data can of course also be transferred to remote PCs via network or modem connections.

As well as supporting the transfer of archived data, the EPPE also offers the possibility of transferring current measured values directly to local or remote PCs for the online display of measured values. It is therefore possible to display the online measured values of several EPPE systems simultaneously on any given PC even if the data

acquisition process is performed at various different locations. The form and content of the screen display can be individually configured. The graphical display of measured values can be either numerical or in the form of various diagrammatic representations.

All quantities can be monitored simultaneously with regard to freely definable limit values. Any limit value violation is registered as an event and recorded. The adaptive save process automatically increases the density of save operations in this case.

In addition, the occurrence of any event can trigger further actions such as the dispatch of a message to a remote PC or the switching of a relay output, for example.



EPPE Software

Simple Operation

The online measuring systems of the EPPE product range are configured and operated exclusively by means of the comprehensive EPPE software package. Modularity, flexibility and user-friendliness are just a few of the distinctive features of this software which provides you with a specialist software solution tailored to suit the requirements of online measurement technology. A multitude of individually definable default settings and templates make learning to use the software a simple matter while at the same time providing the flexibility you require for your specific measurement tasks.

Measurement Applications and Jobs

The device parameters and specific configuration for the current measurement location are saved and managed in a database. These settings are



combined to form what is termed a measurement application. Measurement applications take into account both the allocation of the measurement channels and the properties of the current and voltage transformers connected on the line side.

The measurement jobs themselves are each based on a measurement application. Within the job, limit values are entered either by selecting a norm or by means of manual entry on the basis of individually defined standards. To complete the job creation process you need only enter the measurement period and define with just a few clicks of the mouse which quantities are to be captured and recorded and under which conditions.

Fully Automatic Measurement

Jobs can be created offline. This gives you the freedom to fully prepare all planned meas-

urements at your desk. No additional settings need to be made at the measurement location itself.

Once a job has been transferred to a measuring instrument it is processed automatically. The application/job concept makes it possible to repeat measurements under identical or modified conditions with just a few clicks of the mouse. By transferring a job to various measuring instruments you can carry out completely identical measurements at various locations.

Online Display

Irrespective of the quantities which are to be recorded for a job, it is possible to display all the quantities available on the system online, either on the integral PC or on an external PC. It is irrelevant whether the PC is located on site or is connected to the measuring instrument via a long-distance data transmission link.

The power quality analysers of the EPPE product range are configured and operated exclusively by means of the convenient EPPE software.





The measured quantities themselves can be displayed in one or more display windows either numerically or in the form of various graphs, such as vector diagrams, bar charts or histograms, for example. With the aid of the graphical editor delivered with the software the contents and layout of individual display windows can be adapted flexibly to suit your requirements. To help you get started, a number of standard displays are, of course, included.

Evaluation

The EPPE software package contains a comprehensive array of analysis tools for the evaluation of recorded data. In all evaluation modes the values can be displayed either in tabular form or on various graphs:

The *fluctuation* display is intended specifically for the evaluation of slow signal changes. On this display, mean RMS values can be represented in the

form of a timing diagram or as a frequency distribution of the calculated deviations across the entire record period.

The graphical event display provides an overview of all recorded events in relation to time.

The *extreme value-duration distribution* is used for a graphical classification of events in accordance with the CBEMA standard, amongst others. Here you can see at a glance which events lie outside the limit values defined for intensity and duration in the respective norm.

The tabular event overview provides a summarised classification of all events in accordance with UNIPEDE guidelines, amongst others. The number of events is displayed here classified according to intensity and duration. You can, of course, modify the statistic settings by changing the class boundaries.

Standards and Limit Values

Events are detected on the basis of limit values which are predefined in the measurement job. However, in evaluation mode you have the opportunity to modify these limit values retrospectively for the examination of different variants. This means that once data has been recorded it can be re-evaluated at any time in accordance with different standards and limit values.

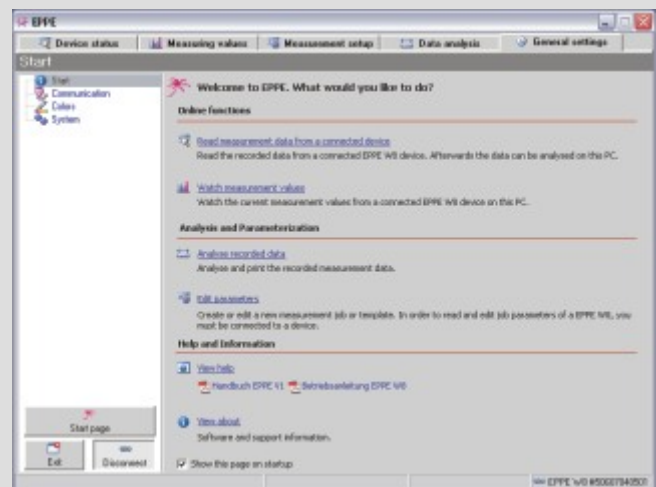
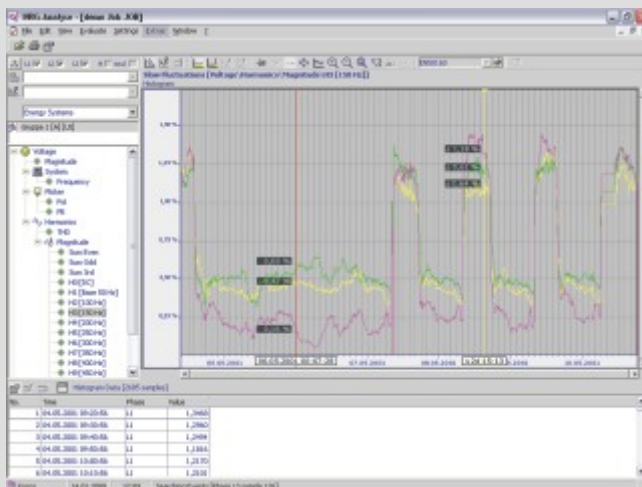
The parameters of one standard currently valid in the European Union are included with the software.

Measurement Report

For the purposes of documentation, evaluation results can be presented in the form of a clear, well-structured measurement report which is prepared with just a few clicks of the mouse. This report is created automatically on the basis of a template included in the software and

contains all relevant data, parameters and results.

The practical Report Generator allows you to edit existing report templates or to create new ones. The content and layout of reports can be tailored to suit your individual requirements. Using the Report Generator's simple, integral macro language you can even programme complex automatic evaluations directly within the report.





Product Specifications



	EPPE L8	EPPE C8	EPPE 8	EPPE R8	EPPE W8
Analog inputs					
Total number	8	8	8	8	8
Voltage inputs	4	4	4	4	4
Current inputs, switchable					
- for current clamps (up to 2 VAC)	4		4	4	4
- for direct current (up to 20 AAC)	4				
- for direct current (up to 40 AAC)		4			
Binary inputs					
	8	12	8	8	2
Binary outputs					
	2	8	2	2	2
Integrated evaluation unit					
	■				
Integrated UPS					
	■	■	■		■
Display					
TFT colour display	■	■			
LCD			4x20 signs		4x20 signs
Touch screen					
	■	■			
Keyboard					
		■	■		■
Status display					
	Power LED	8 LEDs	8 LEDs	8 LEDs	via display
Housing					
	1/2 19", 3 HU portable	for panel mounting	compact portable	compact for DIN rail	hand-held
Dimensions (W x H x D) [mm]	260x165x315	144x144x140	160x78x260	160x63x200	121x252x50
Weight	2.5 kg	1.5 kg	1.5 kg	1.0 kg	0.8 kg

■ standard ■ optional



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