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ENERGY MANAGEMENT SOFTWARE

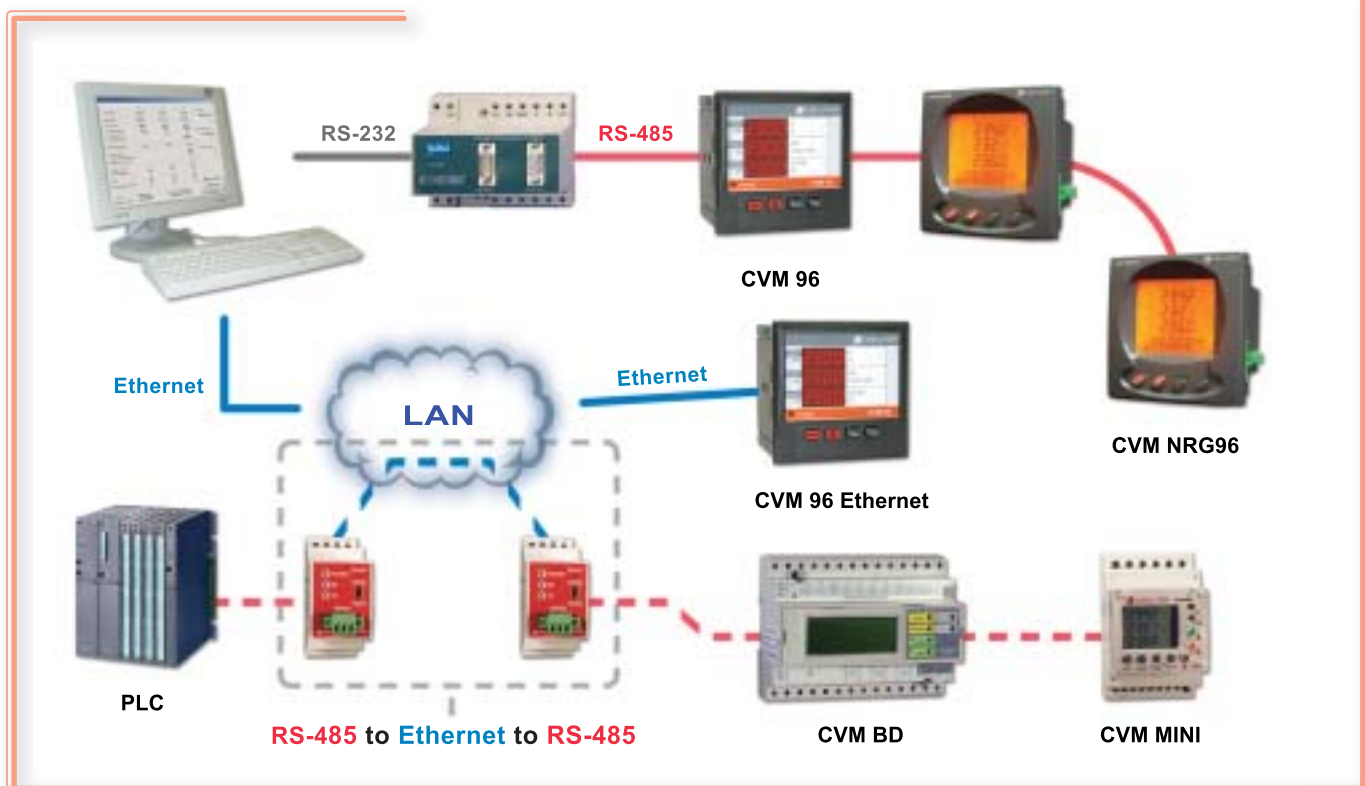
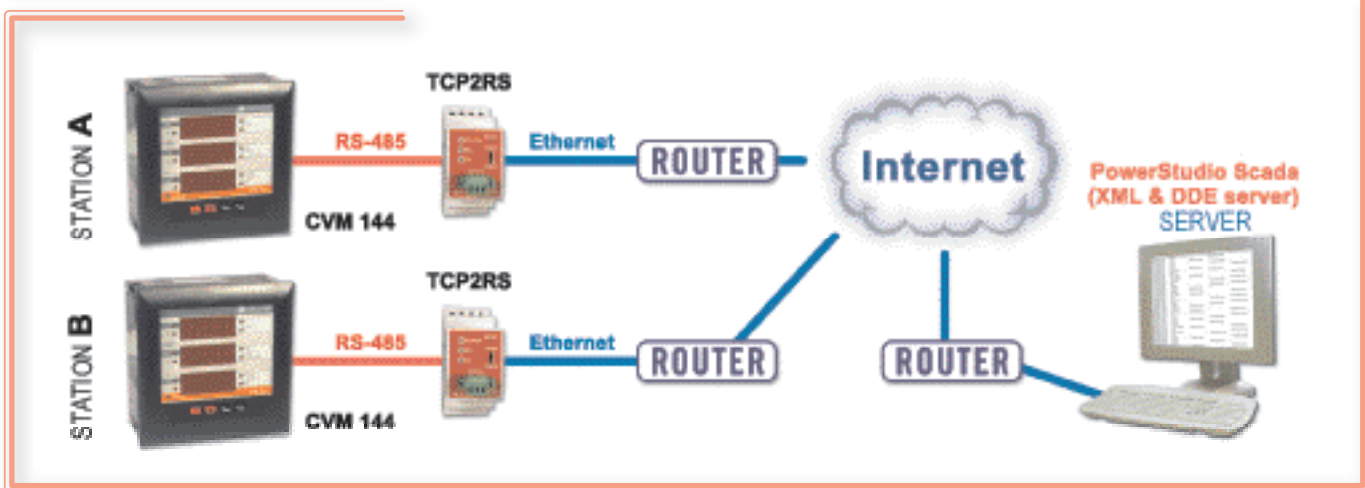




CONTENTS

	PAGE
APPLICATIONS	2
POWER STUDIO	3
POWER STUDIO SCADA	4
POWER VISION	8
SOFTWATT	10
POWERWATT	11
CIRCALC	12
ACCESSORIES	12

APPLICATIONS



POWERSTUDIO



PowerStudio is an abbreviated version of **PowerStudio Scada**.

The main function of this software is to communicate with circutor's metering / controlling devices as well as create tables and graphs of all stored historical data.

PowerStudio allows:

- Visualization of power quality parameters
- Preventative maintenance of electrical systems

The main benefits of **PowerStudio** are:

- Remote parameterization of equipment
- Real time display of measured parameters
- Displays historical data by graphs or tables
- Prints graphs or tables
- Multi-point software (Web Server) using static screens
- XML server and DDE built in (used for data exchange with other applications on the market)
- Highly versatile and easy to use
- Access via the Internet with password protection with ability to create access profiles.

With **PowerStudio**, the user is in complete control of the system, knowing the status of the power lines, including the system's overall consumption of Low voltage and Medium voltage loads, in real time. **PowerStudio** supplies the user with data that can be used to schedule preventive maintenance of which a number of electrical parameters may be checked (see table on the right). An intricate part of this system's supervision includes assessment of the various electrical service parameters achieved by using the correct metering devices.

PARAMETERS	UNIT	L1	L2	L3	III
Phase-neutral voltage	V	•	•	•	
Phase-phase voltage	V	•	•	•	
Current	A	•	•	•	•
Frequency	Hz		•		
Active power	kW	•	•	•	•
Inductive reactive power	kvar L	•	•	•	•
Capacitive reactive power	kvar C	•	•	•	•
Apparent power	kV·A	•	•	•	•
Power factor	PF	•	•	•	•
Power demand	Pd			•	
Neutral current	I_N			•	
Harmonic decomposition		•	•	•	
Voltage THD	% THD - V	•	•	•	
Current THD	% THD - A	•	•	•	
kWh (consumed and generated)	Wh				•
kvarh L (consumed and generated)	varh				•
kvarh C (consumed and generated)	varh				•
kVAh (consumed and generated)	VAh				•

General electrical parameters measured and calculated by the CVM series

AVAILABLE DRIVERS		
Equipment	Division	PowerStudio / PowerStudio Scada
CVM-NRG96	Measuring	•
CVM-MINI	Measuring	•
CVM-96 III / Ethernet	Measuring	•
CVM-144 III / Ethernet	Measuring	•
CVM-BC / BC3	Measuring	•
CVM-B / BD	Measuring	•
CVMk / HAR	Measuring	•
CVM-R8 C / A	Measuring	•
DH96	Measuring	•
LM50-TCP	Measuring	•
LM24-M	Measuring	•
MK	Measuring	•
RGU-10	Protection and Control	•
CBS-8	Protection and Control	•
CDR-8	Protection and Control	•
RRM-C	Protection and Control	•
CIRWATT	Quality & Metering	•



POWERSTUDIO SCADA



The installation of **CIRCUTOR's** System Analyzers fulfills three important requirements:

- Energy supervision in industrial environments
- Preventive maintenance on electrical lines and systems
- Allocating department and/or production process costs

In order to attain these objectives a software package or control application will be necessary, using a centralized data collection system, to assess and respond to the large volume of data being supplied from the various measuring devices. The aim of this software is to process the data and write reports in order to adopt preventive or corrective measures in the electrical system. **CIRCUTOR** has developed the PowerStudio Scada software for complete energy management.

CVM, **CIRWATT** or protection equipment analyzers can be integrated into any **SCADA** system on the market as well as the **POWERSTUDIO SCADA** system. This is due to the communication protocols used by these analyzers, which comply with the communication regulations for each protocol (RTU Modem, Profi bus DP, Johnson Controls or XML).

The memory map is supplied with the manuals, for easy intergration into other supervisory and control systems on the market (Scada, PLC, etc.).

BENEFITS

REMOTE PROGRAMMING OF EQUIPMENT



On-line programming of all connected equipment, from a central computer.

The following may be programmed from **PowerStudio Scada**: voltage and current transformer ratios, digital outputs, analogue inputs / outputs, etc.

REAL TIME DISPLAY OF PARAMETERS



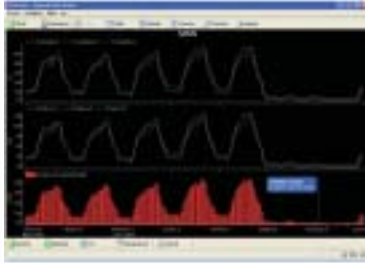
PowerStudio Scada allows the real time display of all equipment showing system parameters and the status of the electrical distribution lines, in real time. This is possible because PowerStudio Scada is constantly communicating with the equipment (polling). The display may be digital (numerical) or analogue (bars) indicating, in colors, equipment which are operating outside their limits (red, orange, green).

RECORDING OF HISTORIES



Automatic recording of parameters. The user initially programs the storage period to start recording. After adding device(s) to the software, **PowerStudio Scada** automatically starts recording all electrical parameters from each device.

DISPLAYING HISTORIES USING TABLES AND GRAPHS



PowerStudio Scada creates tables and graphs based on the recorded parameters grouped according to customer requirements, (by day, week or month.) Using the information represented, the development of any electrical parameter or process may be shown over time including displaying the increase in the totalled variable over time (energy). The user has the option of printing any table or graph generated by the software.

ALARM MODULE



With the alarm module and preset programming, the user may display, in real time, any incident that may occur in the system. The alarms can be easily associated with any integrated parameter in the PowerStudio Scada software, whether it is an electrical parameter or process, in order to achieve excellent preventative maintenance in the electrical system.

MULTI-POINT SOFTWARE (WEB SERVER)

	11	12	13	14	15	16
Active (kW)	200.2	200.2	200.2	200.2	200.2	200.2
Active (kVA)	100.2	100.2	100.2	100.2	100.2	100.2
Active (kWh)	1.0	1.0	1.0	1.0	1.0	1.0
Active (kVArh)	100.2	100.2	100.2	100.2	100.2	100.2
Reactive (kVAr)	100.2	100.2	100.2	100.2	100.2	100.2
Reactive (kVArh)	100.2	100.2	100.2	100.2	100.2	100.2
Power Factor	0.99	0.99	0.99	0.99	0.99	0.99
Reactive (kVAr)	100.2	100.2	100.2	100.2	100.2	100.2
Reactive (kVArh)	100.2	100.2	100.2	100.2	100.2	100.2
Active energy	100.2	100.2	100.2	100.2	100.2	100.2
Reactive energy	100.2	100.2	100.2	100.2	100.2	100.2
Power factor	0.99	0.99	0.99	0.99	0.99	0.99
Reactive energy	100.2	100.2	100.2	100.2	100.2	100.2
Power factor	0.99	0.99	0.99	0.99	0.99	0.99

PowerStudio Scada with internal web server. This method allows anyone, connected to the in-house network (LAN), the ability to display historical data or have the data constantly updated in real time. The screens are dynamic and therefore the web based customer and the master server can display all the data in real time. There are an unlimited number of users who can contact the server. An access filter is available, to connect to the server, limiting screen displays or remote control / programming of the different devices. Access is permitted via the Internet with the option to create different access levels to define authorized users.

BUILT IN DDE AND XML SERVER



In addition to the standard benefits, the **PowerStudio Scada** software has specialized tools for dynamic data exchange in order to integrate energy supervision into an overall control system. To do this **PowerStudio Scada** has communication servers for DDE integration (on site integration) and XML (off site integration).

CONSTRUCTION OF PERSONALIZED SCREENS



PowerStudio Scada allows personalized screens to be made. These screens may show anything from single wire diagrams of the system right up to personalized screens simulating a production process. In this way parameter or status display labels may be attached to indicate the status of a specific point in the system or line. There are an unlimited number of personalized screens, offering the option of creating sectorised display screens, for displaying specific points in the system.

FORCING VARIABLES (REMOTE CONTROL)

By using **CIRCUTOR** equipment in **SCADA** software, there is the option to carry out remote control functions on parts of the installation (forcing them to start or stop).



REPORT GENERATOR AND BILL SIMULATOR MODULE

PowerStudio Scada has the most powerful report generator and bill simulator on the market.

It allows the creation of tariff calendars and programming for: types of hours, types of days, billing calendar and cost calculation.

Any variable logged and recorded by the software in this module is included on the summary report where anything from energy consumption over a predetermined period of time up to a summary of events or incidents may be included.

Reports may be personalized for each case. Mathematical functions may be applied to the log variables in order to obtain production ratios or consumption receipts for an issued electrical bill.

HIGHLY VERSATILE AND VERY EASY TO USE



PowerStudio Scada is an easy and intuitive tool.

Creating a Scada application does not require programming knowledge because the addition of new devices (meters / controllers), making **SCADA** screens and compiling reports does not require any form of training in data acquisition systems. The user interface is via an intuitive system of vertical menus.

DYNAMIC DATA EXCHANGE

In addition to being an excellent energy manager, **PowerStudio Scada** has dynamic data exchange functions to facilitate the integration of other applications on the market.

DDE INTEGRATION

On many occasions there are customers who wish to centralize air conditioning or other function parameters from equipment made by different manufacturers, as well as having information on data from **CVM** system analyzers, **CIRWATT** or protection equipment.

The drawback with the integrators is realized when using different communication drivers to control a large the number of devices. For this reason **PowerStudio Scada** allows different electrical parameters or processes from different **CIRCUTOR** devices to be integrated, using its DDE server, in real time.

The purpose of DDE integration is to facilitate indirect communication from all the equipment being controlled, to the integrator via **PowerStudio Scada**, obtaining a much faster and simpler integration and avoiding the integrator having to use a communication driver for each of the measurement peripherals.

For DDE integration, **PowerStudio Scada** and the generic control application, must be installed on the same platform (same PC) for the on site integration of the required parameters.

XML INTEGRATION

On occasions integrators find that several external applications require data to be remotely read from the same peripheral. This, at times, causes a problem because devices with RS 485 communications can only be polled by a single master. When there is more than one master, there are communications clashes and neither application will receive correct information.

With DDE integration it is possible that more than one application may be installed on the same platform as stated above, on the same personal computer. In the majority of cases this type of installation is unviable because it is very difficult to install systems, which are to be integrated, on the same platform.

The XML communication protocol solves this problem because it can question applications, on the same Local Area Network (LAN) and on the Internet. The only requirement is the slave application or data server has an accessible IP address. This format can request, in real time, any electrical or physical parameter from one or more **PowerStudio Scada** systems installed, on the same system, including accessible external systems (decentralized energy control systems). The end result is permissible communication between software via LAN or the Internet.

INNOVATIONS: INTEGRATION SYSTEMS

Until now the **CVM144-ITF-Ethernet** system analyzer could only communicate with different PC applications, among which included **CIRCUTOR PowerStudio Scada**, using UDP or TCP network protocols. **PowerStudio Scada** operated as an integration engine because it has several communication servers, with external applications, making integration extremely easy and simple. Using this, any application on the market can communicate with the **CVM-144-Ethernet** using DDE or XML via **PowerStudio Scada**.

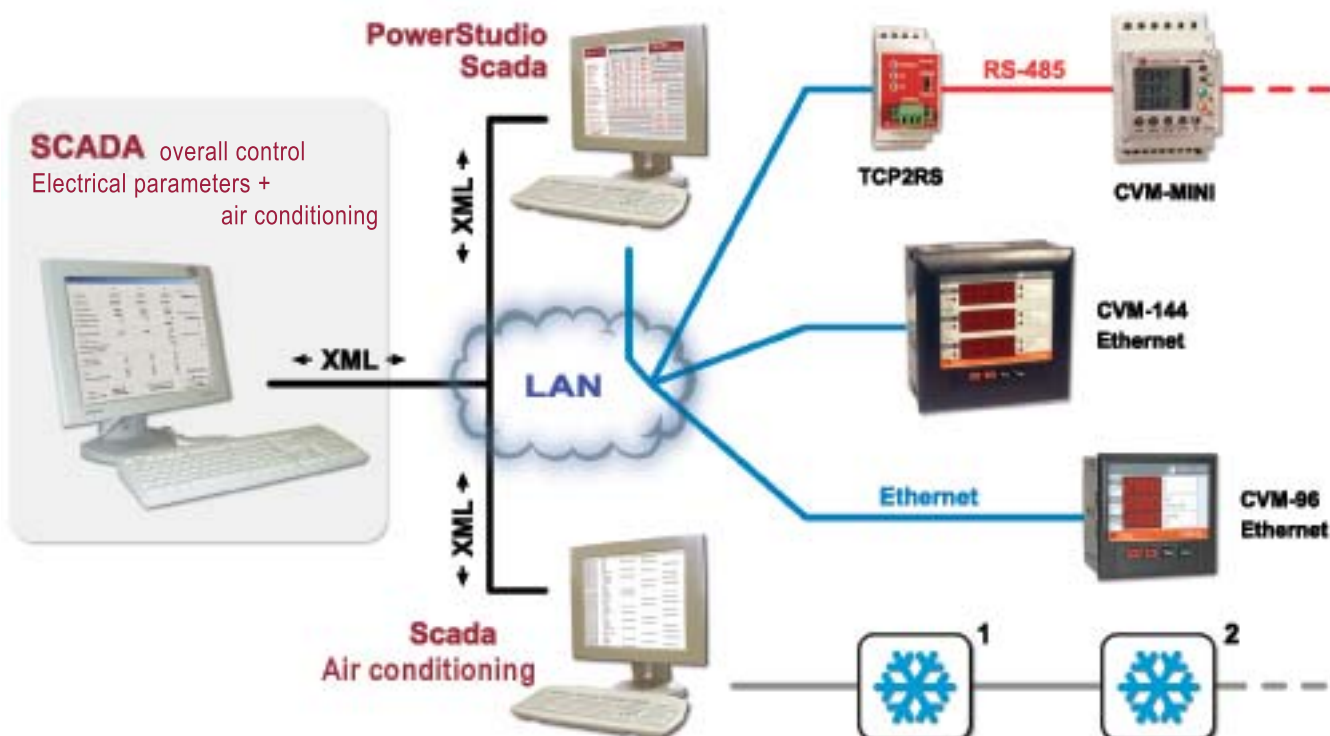
By examining the market and observing the potential for XML communication **CIRCUTOR** has developed a new version of the **CVM-144 Ethernet** which has its own XML server. This has resulted in a CVM system analyzer and an XML server in the same unit. In this way, any application or Ethernet control system may directly interrogate the analyzer via the IP address assigned to the analyzer. This integrates all instant parameters measured or calculated by the **CVM-144- Ethernet** via one single XML sentence.

Any **Scada** or **PLC** on the market, with the option of XML communication (Ethernet), can easily and without any difficulty interrogate this **CVM144-ITF-Ethernet** analyzer. This device comes with communications protocol and the information required to correctly integrate an infinite number of analyzers into one energy control system.

In addition to all the advantages offered in the area of integration, the analyzer also has an internal web server which is polled using an Internet browser and can display electrical parameters via the in-house Ethernet or via the Internet. Alarms can be configured for any electrical parameter and event alarm information can be sent, by the analyzer, to the user via an email message.

This is the first analyzer that includes a web page and the option to send alarm information by email.

For further information: medida@circutor.es





POWERVISION



Power Vision software is used for remote reading and management of recorded information in the **QNA** electrical power quality analyzer and the portable **AR.5 / AR.5-L** analyzers.

It is a high performance tool which increases the power of the recorded information that is polled from the equipment.

Power Vision allows both expert users and first time users to gain maximum benefits from the information in an easy and rapid manner.

BENEFITS OF THE SOFTWARE

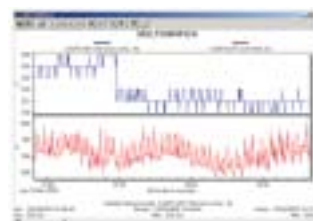
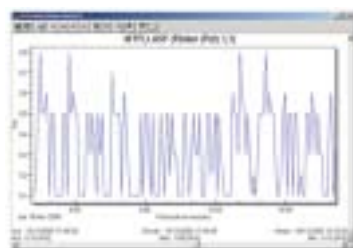
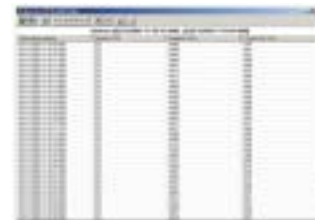
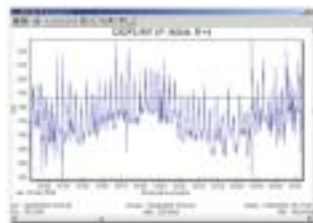
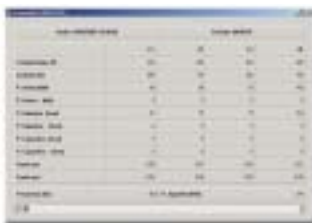
- Real time display of all electrical parameters (**QNA**)
- On site and remote connection to many devices
- Automatic downloading of files (partial, grouped by weeks/months, total)(**QNA**)
- Communication with **AR5-L, AR5, CVM-BDM** and **QNA**

STANDARDS

- Automatic calculation of files applying the **EN 50160** standard or other standard defined by the user
- Option for applying filters on harmonic graphs comparing them to the **EN 50160** standard or other standard defined by the user
- Disturbance file analysis with filter option (**AR5-L, AR5**)

INFORMATION MANAGEMENT

- Creates graphs and table for all variables
- Exports information to .txt files
- Graphical or numeric presentation of the results
- Printing of the results
- Exports graphs and tables to ".bmp"
- Examination of the data, collected from devices, via graphs or tables
- Option for drawing graphs over time
- Configurable graphs: color, type of graph (bar, line, points or area) etc.



COMMUNICATIONS

This part of the program allows the user to not only configure the equipment on site (**RS-232**) or remotely (**RS-485, RTC MODEM, GSM, ETHERNET**) but also to display information measured by the equipment in real time and to automatically download it, indicating every interval when it is to be downloaded (day and time). Automatically downloading information allows the user to choose the files to be downloaded and when they are to be downloaded. This way, there is no time lost connecting to one or more pieces of equipment because the program automatically downloads the information from as many pieces of equipment as the user requires.



Real time display



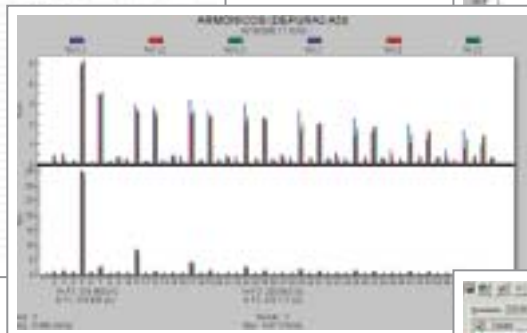
Automatic downloading of files

GRAPHS

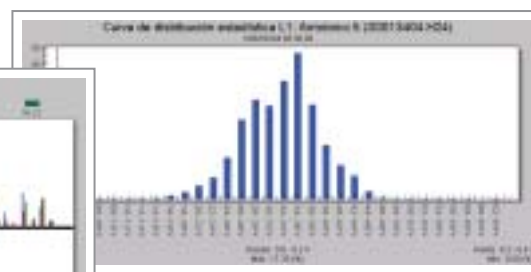
Power Vision obtains the best performance from the information using graphs and tables of more than 200 variables, exporting them to text files (.txt) for subsequent use by other applications including the application of quality standards to determine if the voltage supplied meets existing standards.



List of events



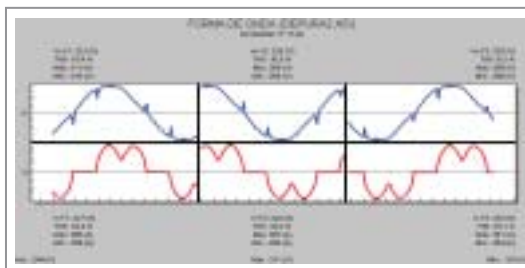
Harmonic decomposition



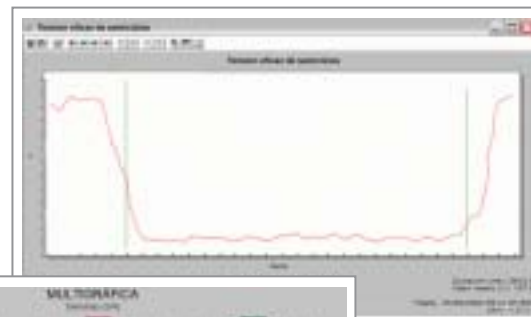
Statistical calculations



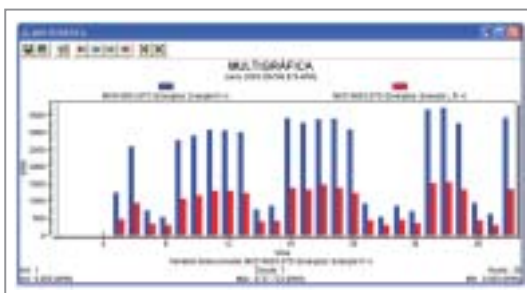
Calculating the electrical power supply quality according to EN-50160



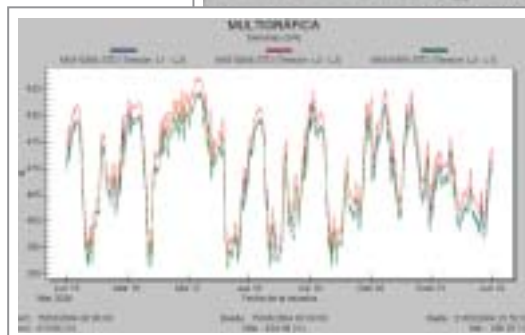
Wave form graphs



half cycle $V_{r.m.s}$ graph



Load curves



Changes to the voltage



SOFTWATT



SOFTWATT software is a program designed for: electricity suppliers, distributors and marketers of energy, and those authorized to program meters for electricity billing. It has been designed to configure **CIRWATT**, **TC/DD** meters and is structured with files that allow several meters to be programmed with the same configuration.

The program is structured into different parts where different parameters, time slots, communication parameters, load curve recording time, input and output configuration, etc. are programmed.

The configuration for each of these parameters may be partially sent.

It allows the meter's communications, time synchronization, measurement and energy variable monitoring to be configured.

TARIFFS / CONTRACTS

SOFTWATT allows the three available contracts in the most complete forms to be configured. It may configure both active and latent contracts (a starting date is set).

An annual calendar is set in each contract which cannot be changed during the years. There are three type of calendars:

- Seasonal calendar: two types of seasons are defined: winter and summer and the seasonal change coincides with the changing clocks.
- Time calendar: this works using times with each having an hourly profile for working days and weekends. There are 12 times and 10 hourly profiles.
- Flexible: one of 10 hourly profiles may be selected for each day (DH5).

Holidays and special days are selected, in the annual calendar with different profiles to working days. (To be applied to the current year or following year).

All profiles allow simple and intuitive configuration.

End of period configuration is done by selecting one day, in every month (fixed at 0:00) when the equipment period automatically closes. If this option is deactivated then no closure occurs..

The contracted power for each tariff may be set. Also variables for calculating maximum demand may be configured.



DESPATCH / RECEIPT OF CONFIGURATION

All or part of the meter's configuration may be received indicating the measuring point, link address and general or reading access password.

The parts of the configuration to be sent, may be selected without the need to send all the information. (Previously stating the measuring point, link address and the writing access password.)

Despatch / receipt of the configuration may be done on site or remotely.



SECURITY

The program allows the configuration of several users with passwords, offering access to different levels in the program.

Two protection levels: settings where only the writing password is required and settings where the writing password is required together with the meter being unlocked.



POWERWATT



POWERWATT is software for remote measurement and management of **CIRWATT** meters.

Meter performance is enhanced using this software, because all recorded information can be used. **POWERWATT** software can start a large number of meters where each device links the information on the customer with consumption.

It also allows the automatic or manual downloading from devices as well as generating table and simulating bills.

It is an ideal tool for small scale distributors or energy consultant companies.

SECURITY



There are different levels of access to the program in order to protect all information in the **POWERWATT** reading software.

There are two user types with access passwords:

- Those who can carry out any form of function in the program.
- Those who may only read the meters.

COMMUNICATIONS



Communications with the meters may be done in several ways:

- Modem. Several types of modem may be used as well as their start up chains, which are independent to each modem.
- On site communication. Using serial ports, USB converters or optical ports with the **CIRWATT** Optical Reader (LOC).
- **TCP/IP**. Via a **CIRCUTOR** (TCP2RS) converter connected to the meter by an IP connection and using the TCP/IP protocol.

DATA BASES



All information about each meter, is stored on the data base, such as:

- Identifier
- Link address / measuring point / access key / password
- Telephone number
- Type of download (manual / automatic)
- Type of files to be downloaded in automatic mode (per contract)
- Number of retries in modem communication
- Reading constant
- Transformers ratios
- Resolution
- Serial number
- Each meter may be linked in another data base having the following fields:
 - Customer
 - Company
 - Group
 - Area
 - Tariff

READING DATA

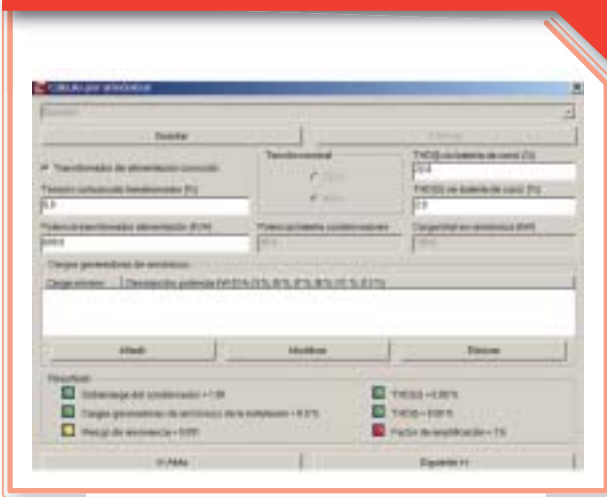


Data may be read manually or automatically.

The **POWERWATT** program has a subprogram (**POWERWATT PDT**) which is used for readings from different equipment taken in the field. This subprogram is linked to **POWERWATT** so that several readings can be made with **POWERWATT PDT** and the information is sent to the central data base by importing the downloaded data.



CIRCALC



Software designed to calculate and select reactive equipment by using:

- Company receipts
- Powers
- The system's electricity consumption data
- Etc.

ACCESSORIES

RS-232 / 485 Converter



Type	Code
RS-232/485 intelligent converter	M54020
RS-232/485 or 422 converter (RTS check)	M54010

- RS-232 to RS-485 system protocol converters
- BUS length of 1200 m permitted with RS-485 protocol
- Power supply 120 or 230 V AC
- Transmission speed: from 4,800 bps up to 38,400 bps
- RTS signal check (in intelligent model) - **PowerStudio**

USB Converter



- USB to RS-232/485 system protocol converter
- Power supply via PC's USB port
- Transmission speed: from 4,800 bps up to 128,000 bps

Type	Code
RS-232-USB converter	M54040
RS-485-USB converter	M54050

CAR RS-485 Amplifier



- RS-485 signal amplifier
- Power supply: 12 V AC
- Transmission speed: from 4,800 bps up to 38,400 bps

Tipo	Code
CAR-485 Amplifier / RS-485 repeater	M54060

TCP2RS, conversor RS-232 / 485 - Ethernet



- RS-232 or RS-485 to Ethernet system protocol converter
- Power supply 85...265 V AC / 115...374 V DC
- Ethernet speed: 10/100BaseTX
- RS Bus transmission speed: from 1,200 bps up to 115,200 bps
- Applications:
 - RS-232 / 485 to Ethernet
 - Ethernet to RS-232 / 485
 - RS-232 / 485 to Ethernet to RS-232 / 485

Type	Code
TCP2RS, RS-232 /485 – Ethernet TCP/IP converter	M54030