



JUPITER PLUS

Elcontrol Energy Net S.p.a. has projected with an innovative choice its new range of portables using the Linux Operative System, whose success is given by its recognized quality of stability and strength.

This choice has permitted to create instruments very performing and updating in every moment, giving to the client/user the assurance to have an ever actual device.

The maximum expression of this new generation is a professional portable power quality analyser which includes Ethernet communication: it is Jupiter Plus.

From the 80's the Power Quality has become a problem more and more important, the massive use of equipments controlled by microprocessors, always more intense, has given a higher sensibility to these machines for the dips and peaks of current, moreover the introduction in the installation of Inverter, engines with direct current, electronic operations, computers etc has increased a lot the presence of harmonics.

These phenomena: harmonics/Interharmonics, dips, swells, micro interruptions, Unbalance, transients, variations of tension that generate flickers, they are not measurable with the common analysers.

Their effects are evident: frequent malfunctions and inefficiency of important equipments, the not timely intervention of the protections, the overheating of the transformers and of the engines etc, that cause an enormous economical damage in all the industry activities.

The study of the solutions must be based on accurate data and measures; Jupiter Plus provides the measurement, the analysis and the storing of all the main phenomena involved in the determination of Power Quality in EN 61000-4-30 and EN 50160 conformity.

In particular this version analyses also the important phenomenon of the Flickers linked to the voltage variations following the EN 61000-4-15 conformity.

An important aspect of the Power Quality is the need of extremely detailed storing. Very often the quantity of storing data is limited by the memory size. Jupiter Plus, with its useful 512MB Compact Flash memory (expandable up to 8Gb), overcomes easily this limitation. The most of the data can be transferred to a computer with the PQ software Studio, which is projected to give an intuitive graphic setting for the data analysis and reporting. The data transfer can be made either extracting and reading directly the Compact Flash or through the Ethernet connection port of the instrument.

The Ethernet connection (LAN) allows to use the PQ Software Study for the complete management of the measurement campaigns from any local or remote PC. The connection of the instrument to the installation is made easier by the 3 flexible current transducers without amplifier given in the kit. The instrument can work connected by the net or by a battery (2 packets with 5 AA rechargeable NIMH 2000A/H batteries). The complete Kit is given with a plastic shock-resistant IP 67 carrying case, with a comfortable soft case inside.

ETHERNET COMMUNICATION!
MEMORY ESTRAIBILE UNTIL 8 GB



JUPITER PLUS is provided with a coloured Display for graphic functions that make the use of the instrument immediate and intuitive. On the display are given all the necessary information to the navigation in the system, and are also displayed the measurements made. The buttons of the Menu page reflect the position of the keyboard and show the button to push to start up each corresponding function of the instrument. Once opened a menu it is possible to explore it, following the given information on the display through a “help on line” system that suggests each time to the user what he has to do, depending on his necessities.



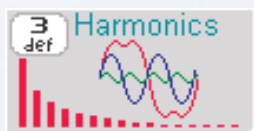
METER (RMS Values):

RMS measurements of all basic electrical parameters, for each phase and for the three-phase system, are displayed numerically.



SCOPE (the Scope function (oscilloscope):

The Scope function lets you view the waveforms of the currents and voltages measured in REAL TIME, and at the same time read their RMS value on the summary table. It is also possible to change the display of the signals by using the zoom function.



HARMONICS/INTERHARMONICS:

The complete measurement of the harmonics and current up to the 32nd order is made in conformity with EN 61000-4-7.

The values of the harmonics are displayed in the form of a histogram in which every harmonic order has the correspondent value and the phase angle between the tension and the current. Interharmonics are signal components with non-multiple frequency as compared to the fundamental frequency and they may be found in systems of any category.

Jupiter Plus displays the values of the Interharmonic Groups, that represent the entity of the interharmonic spectrum present between 2 adjacent harmonics.



FLICKERS:

Voltage variations caused by non-stationary loads may result in lighting intensity variations or changes in the spectral distribution of lighting devices. The optical perception of this effect is called Flicker. Jupiter Plus carries out an analysis of Flickers in compliance with EN 61000-4-15 standards.



PHASOR:

The “PHASOR” page provides a vector graph representation of the three-phase system by plotting the vectors representing the fundamental-frequency components of the line voltages and the respective currents, so that it consents to verify the entity of the possible unbalancing.



TRANSIENTS:

The term “transient” denotes a temporary event caused by the system switching from one steady-state to another (for example, the start of a motor, the triggering of a capacitor bank, the disconnection of loads, etc.). The instrument enables the “capture” of transient over voltages and over currents displaying the waveforms of these events on the screen and showing the relevant peak values in the corresponding side-panel. The instrument can detect transients lasting more than 200µs.



DIPS & SWELLS:

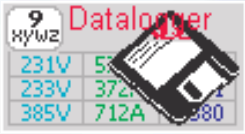
Jupiter Plus calculates the RMS value of the preceding waveform and compares it with thresholds referred to the Nominal Voltage (U_{nom}).

The terms: Swells (Over voltages), Dips (Voltage losses) and Interruptions (Voltage interruptions), they define events exceeding the minimum and maximum thresholds set.



EN50160:

To define the power quality features that must be fulfilled by a power supply, reference is made to the CEI EN 50160 standard. EN50160 can carry out an actual check-up of the power quality on the system, generating a series of real time statistics, and lastly compiling a summary report on the results of the analysis.



DATALOGGER:

This menu permits to start up and/or set up the measurement campaign for the storing data (datalogger). These analysers can use compact flash memories up to 4 GB (4000 MB) and is therefore able to store an enormous amount of data.

It is possible to select the following campaigns:

Timing (waveforms) Campaign

In this mode, Jupiter/Jupiter Plus stores all samples corresponding to a 60-cycle buffer with the frequency set in the relevant Textbox. If "0" seconds is set in the "timing" textbox, the instrument will store all of the samplings made in this memory, without any interruption between successive buffers.

Triggered (events) Campaign

Like the Timing Campaign, also this campaign stores all of the samples of a 60-cycle buffer. However, unlike the previous one, the buffer is stored only when a "transient" event occurs, and therefore this depends on the settings of the various user-defined thresholds.

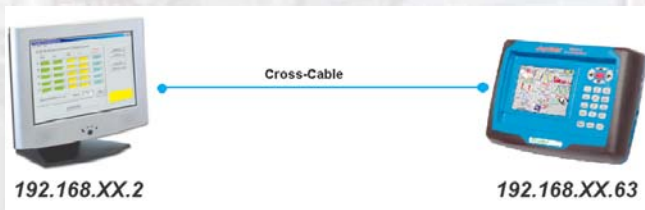
EN50160

As suggested by the name itself of the campaign, this mode starts a power quality analysis and stores its data at regular intervals.

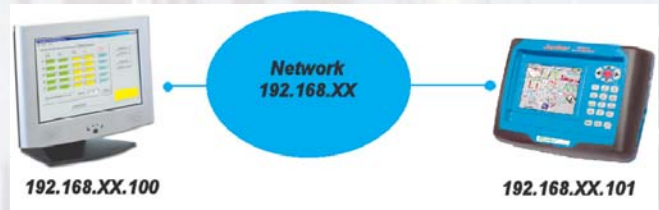
ETHERNET

JUPITER PLUS gives the possibility to perform particularly detailed measurements surveys from a personal computer, by a simple connection to a LAN (Local Area Network).

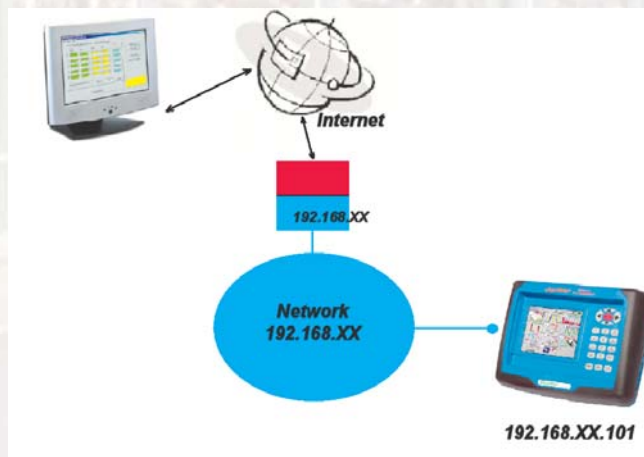
With the support of the dedicated Software is possible to display on the monitor of the personal computer the functions of the instrument through the virtual reconstruction.



DIRECT CONNECTION BETWEEN JUPITER PLUS AND A PC (Peer To Peer).



CONNECTION ON A PRIVATE NETWORK(Intranet):



CONNECTION TO THE INTERNET NETWORK:

KIT JUPITER PLUS

Current and Voltage measurement:

Jupiter Plus Kit includes a set of 3 flexible current probes with 5A – 1000A measuring range and 41cm of length. Thanks to a particular input circuit, Jupiter avoids the necessity of the usual external amplifier/integrator box for the flexible current captors. The elimination of the external circuit-box highly improves the accuracy and eliminates the short autonomy caused by the amplifier's battery supply, as well as enhancing the natural ease-of-use of the flexible clamps. For voltage measurement the Jupiter Plus kit includes a set of 6 measuring cables, colour-coded and with extractable crocodile clips.

In option on the auxiliary channel of the instrument can be connected a clamp for the measurement of the weak currents, such as the leak currents and neutral currents.

Memory:

Jupiter Plus has a massive 512Mb Compact Flash Card to measure all the data. In option it is possible to use memories till 8 GByte.

PC Software:

PQ-Studio is a powerful and simple PC software, specifically designed for the complete analysis and downloading of all the registered data by Jupiter Plus on its Compact Flash.



The software is included in the Jupiter Plus kit.

Power Supply:

The Jupiter Plus kit comes with a desktop power supply (supply of the instrument and recharge of the batteries) and a set of 10 rechargeable, heavy-duty NiMh batteries (AA type, overall capacity 2300mAh).

Transport and Protection:

A special (IP67) shock-and-water proof carrying case, with an internal soft bag, allows a high-transportability and protection of all the Jupiter Plus Kit.



GENERAL TECHNICAL CHARACTERISTICS

Dimensions of the Instrument:

Self-extinguishing ABS case with rubber-coated grips.
Alphanumerical rubber-keyboard.
Dimensions (mm): 300x210x55

Display:

320x240 pixel, colour, graphic LCD screen(mm.115,2x89,3)

Power Supply:

Mains: Desktop Power Supply
Battery: 2 independent battery compartments, 10 AA rechargeable NiMh batteries, 2300mAh.

Voltage Inputs:

3 voltage inputs: double scale 500/1000Vrms; accuracy 0,2%+-0,05%f.s.
Maximum input voltage: 600V CAT III

Current Inputs:

3 current inputs for flexible clamps without external amplifiers(1000Arms) or CT clamps(1000A/1Vac o 3000A/1Vac); accuracy+- 0,2%+-0,05%f.s.(+- the used clamp error). 1 auxiliary channel/ Neutral for each clamp with 0-1 Vac output; accuracy +-0,2%+-0,05%f.s.(+-clamp error).

Fundamental Frequency:

Range of measurable frequency from 40 to 80 Hz.
Harmonics measure up to the 31st order.

Internal Software:

Linux Embedded Operative System.
Software updatable by the user via internet.

Memory:

Removable Compact Flash of 512Mb (supports up to 4 Gb and more, according to the available sizes.)

Languages:

Italian, English, French, German, Spanish.

Accessories:

Clamps to measure low currents or leak currents Clamp-5ma/1A 1A-100°.
Internal Diameter 116 mm.

STANDARDS AND REGULATIONS:

SAFETY:	EN 61010-1 safety for electrical Equipment for measurement.
EMC:	EN 61326; EN 61326/A1/A2/A3 Electromagnetic compatibility for electrical equipment for measurement.
MEASUREMENT:	EN 61004-30 Measurement methods.
	EN 61002-8 Measurement of losses of voltage and interruptions.
	EN 61004-7 Measurement of harmonics and interharmonic
	EN 50160 Power quality