What we provide are a better environment and better information.

This analyzer supports problem-solving by researchers and engineers who are seeking to improve performance and reliability.

Improvements in the performance and reliability of electronic materials, components and circuits for electronic equipment have been increasingly called for in our society—one of remarkable technical advances in household electrical appliances, automotive electronic equipment and energy-saving power electronics equipment.

ZGA5920 was developed as a comprehensive analyzer for measuring impedance and gain-phase, and for accurately determining the response and performance of measurement objects. To provide the measurement information that researchers and engineers need, we offer a measurement environment that achieves highly reproducible measurements.

ZGA5920 is as easy to use as a personal computer. In addition to having the functions of measurement, analysis, simulation using the analysis results, outputting of reports and data management, it’s equipped with functions including the ability to link with external devices, remote control, and the provision of measurement support information.

— It’s a tool that expands the boundaries of measurement equipment.

### Features

- Highly reliable measurements for a wide range of measurement objects
  - Capable of measuring from ultra-low frequency ranges
    - Measurement frequency: 0.1 mHz to 15 MHz
  - Supports measurement of power devices and high-voltage circuits
    - Maximum input voltage: 250 Vrms
    - Dynamic range: 140 dB
  - Isolation between inputs and outputs
    - Voltage isolation: 250 Vrms
  - Extensive range of measurement sweep parameters and high-density sweeping of the frequency axis
    - Frequency, AC amplitude, DC bias, Time
  - Various functions that increase the reliability of the measured data
    - Open-short correction, equalization
    - Amplitude compression (pseudo-current output measurement)
  - A wide array of optional peripheral devices are available, such as a power amplifier for amplifying the driving signal and fixtures for the measurement of various items.

- Upgraded measurement and analysis efficiency!
  - Smooth utilization of data and smooth system linkages
  - Administration of measurement conditions and results
  - Automatic repetition measurement
  - Measurement support
  - Linkage with external devices
    - Control I/O 8 channels
  - Data logging
    - Equipped for analog signal input

- User-friendliness and data management just like those of a personal computer

Results from a simulator: Who knows what they mean? Conventional LCR meters and impedance analyzers can’t measure what you need!

To correctly evaluate the characteristics of electronic components and circuits, it’s fundamental to make measurements in an actual operating environment.

- Impedance measurement of electronic parts
  - Inductors and capacitor are used in large quantities in electronic equipment.
  - To design high-performance equipment, it’s extremely important to accurately know the characteristics of electronic components used in equipment.
  - LCR meters or impedance analyzers are generally used for measuring electronic components; however, measurable values and current are as small as a few volts and about several milliamperes. Some components are used under a voltage of 100V or higher and current of 50A or higher.
  - The values measured by LCR meters and impedance analyzers may differ from those of actual operating conditions.

ZGA5920 provides measurements under actual operating conditions, with its high-voltage input, wide dynamic range, isolation between inputs and outputs, high-voltage, high-current power drive amplifier and measurement adapter with a current detector circuit.

- Measurement of loop gain of the switching regulator
  - To evaluate the stability of the circuit, loop gain is measured.

A/D converted input signals undergo discrete Fourier transform (DFT) to calculate complex impedance values and obtain parameters and characteristics specific to the DFT, such as its capacitance, inductance and quality factor. Original NP algorithms are applied to allow equivalent circuits made up of R, L and C along with the constants for these to be estimated from the complex impedance spectrum obtained by sweeping the frequencies.

In servo analysis, data such as that of the loop frequency and closed-loop gain are used to obtain transfer functions (circuit model) and run simulations of the loop frequency and closed-loop gain.

- Highly detailed and integrated analysis of a wide range of diverse characteristics makes this analyzer invaluable not just for materials research and the development of application products, but for problem solving in all sorts of fields.

For measurements that are not among the 11 prepared types of measurement objects, users can perform user original way of analysis and evaluation by using a simulator or the like.

It can measure 11 types of measurement objects and 22 measurement parameters.

The measurement results can be provided, without complicated calculations or data processing, in a diagram according to the required use. Calculation for the equivalent circuit constant and analysis of transfer function identification are also provided.

- ZGA5920 configuration of measurement
  - Measurement adapter with a current detector circuit.
  - Injects the signal into the loop, and measures the open loop gain under closed loop measurement conditions.
  - High density sweeping of the frequency axis
    - Measurement frequency: 0.1 mHz to 15 MHz
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It can measure 11 types of measurement objects and 22 measurement parameters.

The measurement results can be provided, without complicated calculations or data processing, in a diagram according to the required use. Calculation for the equivalent circuit constant and analysis of transfer function identification are also provided. It’s possible to utilize measured and analyzed data in various ways, for example by loading the identified transfer function data into a simulation tool such as MATLAB.
Measurement and data administration can be comprehensively set in one window.

**Measurement, Analysis and Simulation**

- **Preparation**: From your first use of ZGA5920, the measurement objects and measurement parameters are easily selected on the Application Pallet. The measurement, analysis and simulation windows can be directly activated whenever the power is turned on after that. Measurement support information is provided on the Support Pallet.

- **Graph display of the measurement results**: The measurement results are displayed as a graph. "Graph Details" lists all the types of graphs that can be used to display the measurement results. It’s also equipped with a graph overwriting function and a marker for reading the values.

- **Setting the measurement conditions**: Input the values in the displayed measurement parameter field. Unit setting is easy on the Number Input Pallet.

- **Graph Details**: The measurement results are displayed as a graph. "Graph Details" lists all the types of graphs that can be used to display the measurement results. It’s also equipped with a graph overwriting function and a marker for reading the values.

- **Analysis**: Based on the measurement results, the parameters specific to the measurement object are analyzed. For piezoelectric materials, response frequencies such as the resonance frequency are extracted and the piezoelectric constant is estimated. It’s possible to estimate the matching inductance between the piezoelectric transducer and the driving circuit.

- **Simulation**: Simulation can be executed by freely changing the parameters. The characteristics are displayed on the graph.

- **Report output**: The measurement results are saved as a printable PDF. It’s possible for the user to create a PDF template file. The characteristic graph can be saved as a BMP file.

**Data Administration**

- **Recipe**: This is a function for administering the measurement conditions of the application. The measurement, analysis and simulation conditions and correction values can be pre-registered for each specimen to be measured, which makes it unnecessary to set the conditions for each measurement.

- **Data**: This is a function for administering the results of measurement, analysis and simulation.

**Recipe, measurement and analysis data, simulation data, and analog input data are saved in XML format, and transfer function data are saved in TXT format.**

The import and export of various data is possible by using the dedicated utility software or USB memory.
Automated measurement, linkage with the other systems and so on... The range of applications will expand.

Data Logger

ZGA920 is equipped with an analog signal input function with the input range of 40V. It's possible to assign any necessary data, such as temperature and humidity. Data logging starts with Measurement Start/End and Output On/Off. Setting of delay time is also possible. The input signal during data logging can be monitored by using the Analog Signal Input Monitor of the Tool Pallet.

Linkage with Other Systems

LAN / Control I/O

LAN interface and Control I/O are included as standard peripherals, and it's possible to flexibly configure a test and calibration system combined with external measurement devices.

Software Developer Kit (SDK) and Utility Software

ZGA920 Utility Software

This PC application is used for retrieving ZGA920 data by file and printing them out.

ZGA920 Software Developer Kit (SDK)

Controlling ZGA920 and transferring recipes and measurement results are possible in an ordinary PC programming environment.

Examples of Measurement and Analysis

The resonance responses can be measured at the same signal level as when the sample is actually used. The signal level of general impedance analyzers is about 1V or lower, so the resulting responses may differ greatly from the responses under actual operating conditions.

Real-Driven Measurement Systems

Drive amplifier

The four-quadrant output facilitate a stable output either with L load or C load.

High-speed bipolar power amplifier

Measurement under actual operating conditions including those of high voltage or large current is possible by amplifying the signal output of ZGA920 using a bipolar power amplifier. The bipolar power amplifier is used mainly for measuring the impedance of electronic materials and parts.

Bipolar DC power supply

BA Series/HSA Series

- [Max. 150kHz/DC -20V to 20V (BA4850)]
- [DC - 150kHz/DC -20V to 20V (HSA4014)]

BA Series

- [High current/High current/High current/High current] (BA4850)
- [High current/High current/High current/High current] (BA4850)

HSA Series

- [High current/High current/High current/High current] (HSA4014)
- [High current/High current/High current/High current] (HSA4014)

Bipolar DC power supply

BF Series

- [High voltage/DC - 150kHz/High current] (BF4610)
- [Low voltage/DC - 150kHz/High current] (BF4610)

BF4610

- [High voltage/DC - 150kHz/High current] (BF4610)
- [Low voltage/DC - 150kHz/High current] (BF4610)

Another measurement data

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