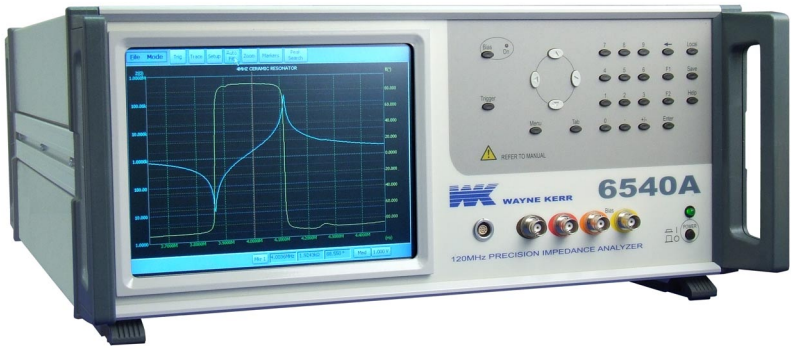
Wayne Kerr Electronics

Technical data sheet



Precision Impedance Analyzers

6520A – 15 MHz

6530A – 50 MHz

6540A – 120 MHz

- Precise high frequency impedance measurements
- Characterize components to 120 MHz (6540A)
- Very fast measurement speed
- 0.05% basic measurement accuracy
- Comprehensive measurement functions
- Easy to use with large TFT touch screen
- Clear graphic displays
- Intuitive user interface
- Fully programmable over GPIB
- Keyboard and mouse optional control
- Competitively priced

The 6500 series of Precision Impedance Analyzers provide precise and fast testing of components at frequencies up to 120 MHz. Basic measurement accuracy is ±0.05% making the instruments the best in the class.

The accuracy and versatility makes the precision analyzers the ideal choice for many different tasks and applications including passive component design, dielectric material characterisation and manufacturing test.

Engineers need to evaluate component characteristics at high frequencies with very high levels of accuracy. The 6540A 120 MHz Precision Impedance Analyzer is therefore ideal for many demanding tasks, combining accuracy and ease of use at an affordable price. If a frequency range up to 120 MHz is not required then the 6530A or 6520A analyzers are available.

Measurement parameters

- Capacitance (C)
- Inductance (L)
- Resistance (R)
- Reactance (X)
- Conductance (G)
- Susceptance (B)
- Dissipation Factor (D)
- Quality Factor (Q)
- Impedance (Z)
- Admittance (Y)
- Phase Angle (Ø)

High measurement accuracy

Capacitance, inductance and impedance basic accuracy is an excellent ±0.05%. Dissipation factor accuracy is ±0.0005 and the quality factor accuracy is ±0.05%.

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Graphical sweep of components

The 6500 series of Precision Impedance Analyzer are highly accurate high frequency component analyzers with a host of useful features.

Graphical sweep of two measured parameters is available and displayed on the large clear colour display. Swept parameters are frequency, drive level and DC bias *.

Display formats available include series or parallel equivalent circuit.

For single frequency measurements a meter mode is available.

Variable drive and bias levels

AC drive levels up to 1 volt or 20 mA can be selected to evaluate components in realistic operating environments. Variable DC bias currents are also provided with current drives up to 100 mA / 40 V.

External control

The GPIB interface is used to control the instrument and read back measured values for applications such as quality control or for archiving purposes.

An Ethernet interface similarly allows the instrument to be controlled and to send out data - allowing it to be integrated into many test environments.

Wide range of interfaces

An external monitor or projector may be connected to the instrument. The ability to provide a large screen display of measurement results is invaluable in production environments or for teaching and training.

Instrument control from both a keyboard and mouse is available. Any keyboard or mouse, with either PS/2 or USB interfaces, can be simply connected to provide an alternative method of instrument control and operation.

Data storage and retrieval

All measurement and setup data can be stored using the Ethernet interface or a USB flash memory.

Setup Data

Up to 20 instrument setups may be locally stored for each mode.

Bin handling

Isolated (24 V) or as alternative non-isolated (5 V) signals are available through a 25-way D-type connector.

* Future Enhancement

Printer outputs

Hard copy printouts can be obtained in a number of ways including direct to an HP-PCL compatible graphics printer or Epson compatible text/ticket printer. A networked HP-PCL compatible printer may also be used via the Ethernet connection.

Component connections

Four front panel BNC connectors permit three or four terminal connections with the screens at ground potential.

The 1J1011 component fixture, supplied with all models, ensures optimum performance when measuring a wide range of components.

To provide more connection options a range of optional accessories is available.

Protection against charged capacitors

High precision measuring instruments can be damaged by charged capacitors which can cause costly repairs and unacceptable downtime. All the models in the range incorporate protection against charged capacitors.

Comprehensive and precise component tests at higher frequencies

The 6500 series is best summarised by “Comprehensive and precise component tests at higher frequencies”. The instrument is the perfect solution for those who have demanding component measurement needs.

Simultaneous plot of impedance and phase displayed against frequency on a clear colour display

Technical specifications

Measurement parameters

Any of the following parameters can be measured and displayed:

AC functions

- Capacitance (C)
- Inductance (L)
- Resistance (R)
- Reactance (X)
- Conductance (G)
- Susceptance (B)
- Dissipation Factor (D)
- Quality Factor (Q)
- Impedance (Z)
- Admittance (Y)
- Phase Angle (Ø)

Display format

Series or parallel equivalent circuit.

Test conditions

Frequency range

6520A 1 kHz to 15 MHz
6530A 1 kHz to 50 MHz
6540A 1 kHz to 120 MHz
Accuracy of set frequency ±0.005%

AC drive level

10 mV to 1V rms*
200 µA to 20 mA rms*

*Varies with frequency

Signal source impedance: 50 Ω nominal

DC bias (option)

100 mA of DC bias current
40 V of DC bias voltage

Mode of operation

Graphical sweep mode

Allows graphical sweep of any two measurement parameters

Swept parameters: - frequency, drive level or DC bias

Meter mode

Allows the instrument to be used as a standard LCR meter

Setup Data

Up to 20 instrument setups may be locally stored for each mode.

Measurement connections

Four front panel BNC connectors permit three or four terminal connections with the screens at ground potential.

Measurement accuracy

Dissipation factor

±0.0005 $(1+D^2)$*

Quality factor

±0.05 %(Q+1/Q)*

Capacitance / Inductance / Impedance

±0.05%*

*Varies with frequency, drive level and measured impedance

General

Power Supply

Input voltage 90 V AC to 264 V AC (Autoranging)

Mains frequency

47 to 63 Hz

Display

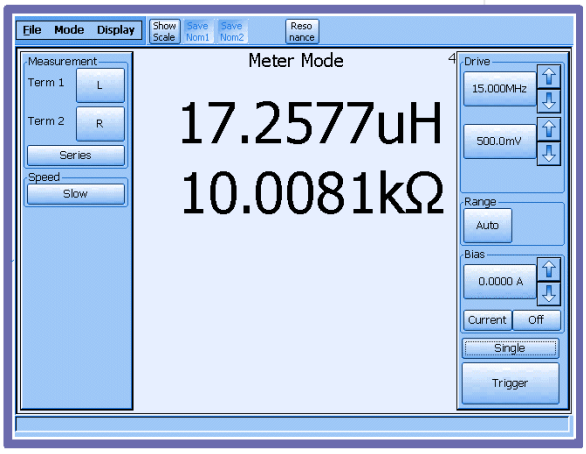
8.4″ VGA (640 x 480) colour TFT with touch panel

Local Printer

HP-PCL compatible graphics printing
Centronics / parallel printer port, Epson compatible text / ticket printing

Network Printer

HP-PCL compatible graphics printing



The meter mode gives a clear and concise digital display of component characteristics

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Remote trigger
Rear panel BNC with internal pull-up, operates on logic low or contact closure

USB interface
Two Universal Serial Bus Interfaces

USB 1.1 compliant

VGA interface
15-way D-type connector to drive an external monitor in addition to the instrument display

Network interface
10/100-BASE-TX Ethernet controller. RJ45 connector

Keyboard interface
Standard USB or PS/2 keyboard port. Instrument front panel remains active with keyboard plugged in

Mouse interface
Standard USB or PS/2 mouse port. Touch screen remains enabled when the mouse is connected.

Bin handler (option)
Isolated (24 V) or non-isolated (5 V). 25-way D-type connector

GPIB interface (option)
External instrument control. 24 pin IEEE 488 connector

Environmental conditions

This equipment is intended for indoor use only in a non-explosive and non-corrosive atmosphere

Temperature range
Storage -20°C to 60°C
Operating 0°C to 40°C
Full Accuracy 18°C to 28°C

Relative humidity
Up to 80% non-condensing

Altitude
Up to 2000 m

Installation category
II in accordance with IEC664

Pollution degree
2 - mainly non-conductive

Safety
Complies with the requirements of EN61010-1

EMC
Complies with EN61326 for emissions and immunity

Mechanical
Height 190 mm (7.5″)
Width 440 mm (17.37″)
Depth 525 mm (20.5″)
Weight 14.5 kg (32 lb)

Order codes

Description	Order code
6520A 15 MHz Precision Impedance Analyzer	1J6520A
6530A 50 MHz Precision Impedance Analyzer	1J6530A
6540A 120 MHz Precision Impedance Analyzer	1J6540A

All models supplied with:-
User manual
2 m AC power cable
Universal component fixture (1J1011)
USB memory

Options

Description	Order code
Bin handler (isolated 24 V)	/B2
Bin handler (non-isolated)	/B1
GPIB interface	/G
DC Bias	/D1

Optional accessories

Description	Order code
Certificate of calibration	1JCALRES

UK
Wayne Kerr Electronics
Vinnetrow Business Park
Vinnetrow Road, Runcton
Chichester, West Sussex
PO20 1QH, UK
Tel: +44 1243 792200
Fax: +44 1243 792201

USA
Wayne Kerr Electronics
165L New Boston Street
Woburn
MA 01801-6201 USA
Tel: +1 781 938 8390
Sales: (800) 933 9319
Fax: +1 781 933 9523