Wayne Kerr Electronics

Technical data sheet

HF LCR Meters

6505P 5MHz
6510P 10MHz
6515P 15MHz
6520P 20MHz
6530P 30MHz
6550P 50MHz
65120P 120MHz

- Precise high frequency impedance measurements
- Characterize components to 120MHz (65120P)
- Fast measurement speed
- 0.05% basic measurement accuracy
- Comprehensive measurement functions
- Easy to use with large TFT touch screen
- Intuitive user interface
- Fully programmable over GPIB
- Keyboard and mouse control
- Competitively priced

Accuracy and versatility makes these HF LCR Meters the ideal choice for many different tasks and applications in the area of manufacturing test. The wide range of frequency specifications means that a customer can select the model which best meets their requirements and budget.

AC Measurement parameters

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

High measurement accuracy

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

Variable drive and bias levels

AC drive levels up to 1V or 20mA can be selected to evaluate components in realistic operating environments. /D1 DC bias option provides 0 to +40Vdc bias voltage and 0 to +100mAdc bias current. /D2 DC bias option provides -40V to +40Vdc bias voltage.

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's VGA output. 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

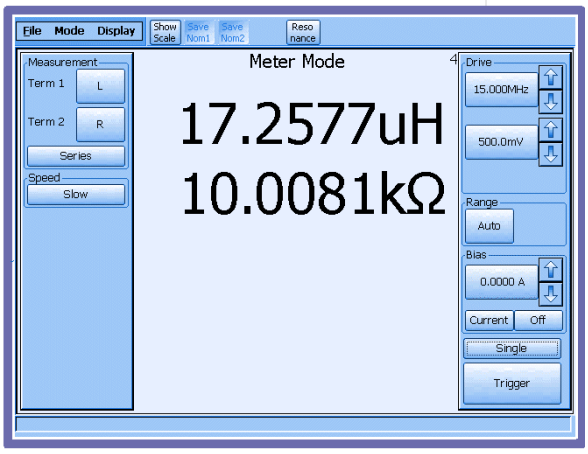
All measurement and setup data can be stored using the Ethernet interface or a USB flash memory (supplied as standard).

Setup Data

Up to 20 instrument setups may be locally stored.

Bin handling

/B1 option (non-isolated 5V) or /B2 option (isolated 24V) signals are available through a 25-way D-type connector. 10 bins can be set using absolute or percentage limits.



Example of measurement showing clear and concise digital display of component characteristics

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 leaded components and devices.

1J1012 (2 terminal) and 1J1014 (4 terminal) Fixtures allow connection to surface mount devices.

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 6500P 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.

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Technical specifications

Measurement parameters

Any of the following parameters can be measured and displayed:

AC functions

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

Display format

Series or parallel equivalent circuit – all parameters

Test conditions

Frequency range

6505P 20Hz to 5MHz
6510P 20Hz to 10MHz
6515P 20Hz to 15MHz
6520P 20Hz to 20MHz
6530P 20Hz to 30MHz
6550P 20Hz to 50MHz
65120P 20Hz to 120MHz
Frequency step size: 0.1mHz
Accuracy of set frequency ±0.005%

AC drive level

10mV to 1Vrms*
200µA to 20mArms*

*Varies with frequency

Signal source impedance: 50 Ω nominal

DC bias D1 option

0 to +100mAdc bias current; 0 to +40Vdc bias voltage

DC bias D2 option

-40V to +40Vdc bias voltage

Binning (optional)

10 bins with absolute and percentage limits.
25 way D-type interface connector.

Option /B1 (non-isolated)

Common 0V. Bin outputs 0 to 5V (nominal) with >10mA current sink capability.

Option /B2 (isolated)

Common 24V input. Outputs 0 to 24V with >10mA current source capability.

Mode of operation

Meter mode

Allows the instrument to be used as a standard LCR meter

Setup Data

Up to 20 instrument setups may be locally stored.

Measurement connections

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

1J1011 Component Fixture (supplied as standard) allows connection to leaded components and devices.

1J1012 (2 terminal) and 1J1014 (4 terminal) Fixtures allow connection to surface mount devices.

Measurement accuracy

Dissipation factor

$\pm 0.0005 (1+D^2)$*

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 90VAC to 264VAC (Autoranging)

Mains frequency

47Hz to 63Hz

Display

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

Local Printer

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

Network Printer

HP-PCL compatible graphics printing

GPIB interface
External instrument control. 24 pin IEEE 488 connector

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)
/B1 option (non-isolated 5V) or /B2 option (Isolated 24V). 25-way D-type 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
6505P 5MHz HF LCR Meter	**1J6505P**
6510P 10MHz HF LCR Meter	**1J6510P**
6515P 15MHz HF LCR Meter	**1J6515P**
6520P 20MHz HF LCR Meter	**1J6520P**
6530P 30MHz HF LCR Meter	**1J6530P**
6550P 50MHz HF LCR Meter	**1J6550P**
65120P 120MHz HF LCR Meter	**1J65120P**

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

Options

Description	Order code
Bin handler (non-isolated)	/B1
Bin handler (isolated 24V)	/B2
DC Bias (0 to +40V, 0 to +100mA)	/D1
DC Bias (-40V to +40V)	/D2