

## 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

### AC Measurement parameters

- Impedance (Z)
- Phase Angle ( $\theta$ )
- 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  $\pm 0.05\%$ . Dissipation factor accuracy is  $\pm 0.0005$  and the quality factor accuracy is  $\pm 0.05\%$ .

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.

## 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.

## 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.

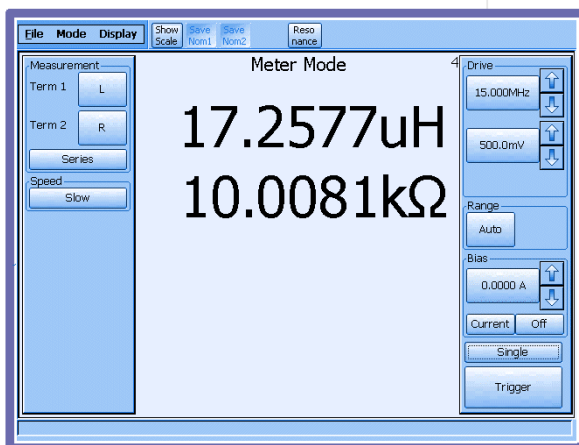
1J1012 (2 terminal) and 1J1014 (4 terminal) Fixtures allow connection to surface mount devices.

## 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.



## Technical specifications

### Measurement parameters

Any of the following parameters can be measured and displayed:

#### AC functions

- Impedance (Z)
- Phase Angle ( $\emptyset$ )
- 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  $\pm 0.005\%$

#### AC drive level

10mV to 1Vrms\*  
200 $\mu$ A to 20mA<sub>rms</sub>\*

\*Varies with frequency

Signal source impedance: 50  $\Omega$  nominal

#### DC bias

##### D1 option

0 to +100mA<sub>dc</sub> bias current; 0 to +40V<sub>dc</sub> bias voltage

##### D2 option

-40V to +40V<sub>dc</sub> 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

$\pm 0.05\% (Q+1/Q)^*$

#### Capacitance / Inductance / Impedance

$\pm 0.05\%*$

\*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



# Technical data sheet

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## **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**

**6505P**  
5MHz HF LCR Meter

**6510P**  
10MHz HF LCR Meter

**6515P**  
15MHz HF LCR Meter

**6520P**  
20MHz HF LCR Meter

**6530P**  
30MHz HF LCR Meter

**6550P**  
50MHz HF LCR Meter

**65120P**  
120MHz HF LCR Meter

All models supplied with:-

User manual      2 m AC power cable  
Universal component fixture (1J1011) USB memory

## **Options**

### **Description**

Bin handler (non-isolated)  
Bin handler (isolated 24V)  
DC Bias (0 to +40V, 0 to +100mA)  
DC Bias (-40V to +40V)

### **Order code**

**1J6505P**

**1J6510P**

**1J6515P**

**1J6520P**

**1J6530P**

**1J6550P**

**1J65120P**

### **Order code**

/B1

/B2

/D1

/D2