

## Precision Magnetics Analyzer - 3260B

- Wide frequency range of 20 Hz to 3 MHz
- Fast measurement speed - up to 20 measurements per second
- 0.1% basic accuracy
- Up to 250 A of DC bias current
- Telecom measurement functions
- Analysis mode with graphical displays
- Comprehensive measurement functions including leakage tests
- Straightforward intuitive operation
- Print test results
- GPIB control with LabVIEW™ driver

### Completely characterize components graphically

At the design stage of component development it is vitally important to understand how the component performs under different operating conditions. This might include operation at diverse frequencies, AC drive levels or DC bias currents.

The 3260B Precision Magnetics Analyzer can plot any of the measurement functions, such as inductance (L) or impedance (Z), (including secondary term) against frequency, AC drive level or DC bias current.

Frequency sweeps within the range 20 Hz to 3 MHz can be selected. There is a choice of either linear or logarithmic frequency displays.

3260B is especially suitable for measuring parameters on telecom transformers.

The selected parameter and its secondary value are presented graphically. AC drive levels can be set between 1 mV and 10 V. DC bias current can be set from 1 mA to 1 A internally. Using external 3265B 25 A DC Bias Units bias currents can be set to a maximum of 250 A.

### Measure Insertion Loss and Return Loss on telecom transformers

The 3260B Precision Magnetics Analyzer not only measures IL and RL but the instrument also allows the user to enter the values for terminating resistance or impedance, if complex, and to select a damped network or blocking capacitor if required.

### Specification summary

Measurement functions	Z, $\emptyset$ , L, C, Rac, Rdc, Q, D Turns ratio Primary and secondary leakage inductance Interwinding capacitance Resonant frequency
Frequency range	20 Hz to 3 MHz
Basic accuracy	0.1%
Modes	Analysis (graphing) Telecom Multi Frequency Sequence
DC bias current	1 mA to 1 A (internal) To 250 A (using five 3265B DC Bias Units)
Interface	GPIB
Measurement speed	Up to 20 measurements/sec

## Printed output of test results

Using the parallel Centronics interface the user can directly print test results including graphs for further analysis and archiving.

In addition, via the GPIB interface, the instrument can be controlled from a PC and results can be read back for analysis and storage. LabVIEW™ drivers are available on request or via our website, [www.waynekerrtest.com](http://www.waynekerrtest.com), providing a base from which a user can develop a specific test application.

## Bin sort

The bin sort function allows component manufacturers to sort components in up to ten bins. Sorting is carried out either by absolute values or by percentage of values.

## Component tests with up to 250 A DC bias current

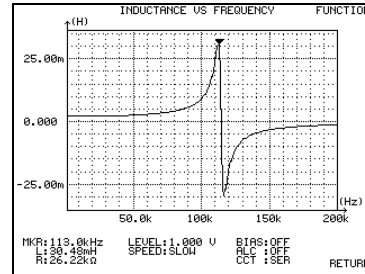
To evaluate components at high currents up to 250 A the optional 3265B DC Bias Unit is used.

25 A of DC bias current can be set in steps of 0.025 A with one unit whilst up to five units can be used in parallel to give up to 250 A DC bias current at 1MHz (50A at 3MHz). The standard 3260B Precision Magnetics Analyzer can provide an internal DC bias from 1 mA to 1 A.

The 3265B has a number of safety and protection features including a safety interlock system to protect the user against back EMFs. It is also fully protected against over temperature, excess voltage drop and sense lead failure.

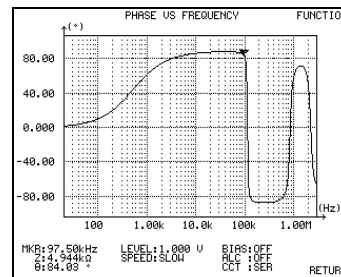
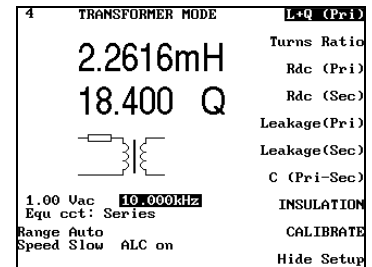


3265B DC Bias Unit can deliver up to 25 A of DC bias current in steps of 0.025 A



Inductance plotted against frequency

Illustration of Telecomms mode



Phase plotted against frequency

## Technical specifications

### Precision Magnetics Analyzer - 3260B

#### Operation modes

##### **Impedance mode**

Inductance (L), Impedance (Z), DC Resistance (Rdc) and Capacitance (C).

Series or parallel equivalent circuit

Loss term: Quality factor (Q),

Dissipation factor (D), AC Resistance (Rac) and

Phase Angle ( $\emptyset$ )

Analogue scale (bar graph) with nominal, absolute and percentage modes

##### **Handler mode**

Enables existing 4-wire scanners to be used

Functions as for impedance mode plus Turns Ratio

##### **Transformer mode**

Rdc of each winding, Primary or Secondary Leakage

Inductance and Q, Turns Ratio, Interwinding Capacitance

Insulation between windings from either winding to

screen/core is available as an option.

##### **Telecom mode**

Provides derivation of Insertion Loss (IL) and Return Loss (RL) for line matching transformers operating in the telephone speech band (100 Hz to 20 kHz). Values of line impedance ( $Z_0$ ) and termination ( $R_t$ ) are user selectable. Optional simulated damping network and series blocking capacitor are user configurable.

##### **Analysis mode**

Measurement parameters and test conditions set using measurement mode.

Graphical sweep versus frequency, AC drive level or DC bias current with selection of start, stop, step size, units and linear/log.

##### **Multi-frequency mode**

Measurement parameters and test conditions set using measurement mode. Up to eight frequencies with absolute or percentage limits on major term PASS/FAIL indications.

#### Test conditions

##### **Low level AC drive**

For measurement of L + Q, Ls + Rs,

C, Z, Turns Ratio and Leakage Inductance

##### **Frequency range**

20 Hz to 3 MHz interwinding capacitance, minimum frequency 100 Hz

##### **Steps**

Increments of 1% or better across range

1800 frequencies approx.

Accuracy of selected frequency  $\pm 0.01$  %

##### **Drive level**

Source impedance 50  $\Omega$

1 mV to 10 V rms into open circuit

50  $\mu$ A to 200 mA rms into short circuit

Automatic Level Control (ALC) maintains level applied to DUT at  $\pm 2\%$ ,  $\pm 1$  mV of set voltage or  $\pm 2\% \pm 0.1$  mA of set current.

##### **DC bias current**

1 mA to 1 A DC (2A /U option) is available from internal, fast settling bias supply over full frequency range

Voltage compliance 20 V minimum

Safety interlock minimises operator exposure to high currents.

##### **DC resistance**

Low test level of 100 mV minimises heating of the device under test.

Short circuit current 10 mA

##### **Insulation (option)**

Test voltages of 100, 200 or 500 V DC, user selectable

Results can be displayed as a current or resistance value  
Voltage accuracy  $\pm 3\%$

For user safety, short circuit current is limited to  $< 2$  mA

##### **Bin Handler mode (option)**

Sort to 1 of 10 bins using absolute or percentage limits.  
Separate Pass/Fail output.

Up to 100 bin limit set-ups stored in non-volatile memory.

TTL interface to external bin handler via 25 way D type connector.

##### **Telecom mode (option)**

Drive level -28 to 16 dBm

Test time varies with level

$Z_0/R_t$  50 to 2000  $\Omega$

Test time  $< 1.5$  s typical

#### Measurement speeds

For impedance, turns ratio, DC resistance and insulation

4 speeds selectable: MAXimum, FAST, MEDIUM and SLOW  
MAX (20 measurements per second)

for component sorting under GPIB remote control.

FAST Approximately 10 measurements per second.

SLOW Approximately 1 per second for increased stability and accuracy

#### Measurement ranges

R 0.01 m $\Omega$  to  $> 2$  G $\Omega^*$

L 0.1 nH to  $> 1000$  H\*

C 5 fF to  $> 1$  F\*

#### Accuracy

Inductance/Rac/Z/Cp  $\pm 0.1$  %\*\*

Q  $\pm 0.1\%$  (Q+1/Q)\*\*

D  $\pm 0.001$  (1+D<sup>2</sup>)\*\*

Turns ratio  $\pm 0.1$  %\*\*

Rdc  $\pm 0.5$  %

Insulation  $\pm 5$  % (500 V test)

Insertion loss  $\pm 0.1$  dB

Return loss  $\pm 1$  dB

Basic accuracy varies with frequency,  $Z_0$ ,  $R_t$ , range and level

\* Varies with measurement speed

\*\* Varies with frequency and option chosen

## General data

### Input specification

Power supply  
230V AC  $\pm 10\%$  or  
115V AC  $\pm 10\%$  (selectable)  
50 to 400 Hz  
400 VA maximum consumption

### Display

High contrast monochrome LCD  
320 x 240 dot with back lighting.  
Visible area 115 x 86mm.  
Viewing angle 45°

### Measurement connections

8 front panel BNC sockets  
2- or 4-wire (Kelvin) measurements with screen at ground potential  
Equivalent circuit symbols on screen.  
Separate terminals for primary and secondary connections.  
LEDs indicate active terminals.

### Remote control (option)

Conforms with GPIB IEEE488.2 and SCPI 1992.0

### Printer output

Centronics parallel printer port

### Ambient conditions

Operating temperature range 0°C to 40°C.  
Full accuracy 15°C to 35°C

### Safety

Complies with the requirements of EN61010-1

### EMC

Complies with EN50081-1, EN50082-1 generic emissions and immunity standards by meeting with the requirements of EN55022, IEC801.2, IEC801.3 and IEC801.4

### Mechanical (approx. overall)

Height 150 mm (6")  
Width 440 mm (17 3/8")  
Depth 520 mm (20 1/2")  
Weight 11 kg (24 lb 4oz.)

## Order codes and options

### Description

3260B Precision Magnetics Analyzer  
Supplied with user manual, power cable, spare fuses, two transfer standard capacitors and safety interlock jack

### Order code

1J3260B

### Options

Insulation resistance test (500 V)	/N
Analysis function (graphs)	/G
LF Telecom function	/T
Bin handler	/D
Faster DC bias ramp up & ramp down	/S

### Auxiliary unit

25A DC bias unit 3265B (1 MHz) **1J3265B**  
Supplied with user manual, power cable, spare fuses, 4 x BNC to BNC links, daisy chain link, rack mounting ears and bus bars.

25A DC bias unit 3265BQ (3 MHz) **1J3265BQ**

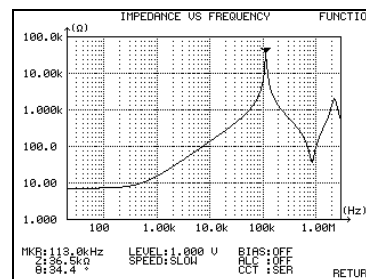
Supplied with user manual, power cable, spare fuses, 4 x BNC to BNC links, daisy chain link, rack mounting ears (unit needs rear support) and bus bars.

### Accessories

#### Description

Rack mounting kit. 3U x full width	<b>1EXA20230</b>
Kelvin clips (fine jaws).	<b>1EVA40100</b>
(2 sets recommended for transformer tests)	
Kelvin clips (large jaws)	<b>1EVA40180</b>
BNC to 4-terminal component fixture.	<b>1EV1006</b>
Recommended above 500 kHz	
4-terminal lead set	<b>1EV1505</b>
(SMD Tweezers)	<b>1EVA40120</b>

#### Order code



Impedance plotted against frequency

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