3260B **Precision Magnetics** Analyzer

3255B **Inductance** Analyzer

3265B **25A** Bias Unit

Wayne Kerr
Electronics

Whatever the Transformer or Inductor test requirement Wayne Kerr Electronics has the right solution.

Wayne Kerr Electronics is the only company to offer a comprehensive range of Inductance and Transformer test equipment, which can meet the requirements of the whole market.

Whatever the requirement... telecom measurements, graphical component characterisation, high speed production testing, accurate repeatable measurements, large DC bias currents or just cost... Wayne Kerr Electronics has the solution.

Wayne Kerr Electronics are the acknowledged world leader in Inductance and Transformer test with over 50 years experience of innovative product design.

Key Features

- Wide frequency range – 20Hz to 3MHz
- Basic accuracy – 0.1%
- Telecom measurement function
- Analysis mode (Graphing)
- Swept - Frequency, AC Drive Level and DC Bias Current
- Comprehensive measurement functions, including leakage tests
- Up to 125Amps of DC bias current
- Straight forward, intuitive operation
- Print test results
- IEEE488 control using FREE LabVIEW™ driver

Completely characterize your component graphically

At the design stage of component development it is important to understand how the component will perform under different test conditions. This might include Frequency, AC Drive Level or DC Bias Current.

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.

A Frequency range from 20Hz to 3MHz can be selected and displayed linearly or logarithmically. The selected measurement parameter and its secondary value is presented graphically. The AC Drive Level can be set between 1mV to 10V, whilst the DC Bias Current, using the external 3265B unit, can produce between 1mA and 125A of Bias.

Measure Insertion Loss and Return Loss on Telecom Transformers

With the explosive growth of PC's connected to the telephone system for Internet access has come the requirement to measure Insertion Loss (IL) and Return Loss (RL) of line matching transformers.

The 3260B Precision Magnetics Analyzer has this capability. It 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.

Products at a glance

Function	3260B	3255B	3265B
Frequency Range	20Hz - 3MHz	20Hz - 500kHz	N/A
Basic Accuracy	0.1%	0.25%	
Measurement Function	Z, ϕ, L, C, Rac, Rdc, Q, D, Turns Ratio, Leakage L, Interwinding C, Resonant Frequency	Z, ϕ, L, C, Rac, Rdc, Q, D, Turns Ratio, Resonant Frequency	
'Analysis' mode	Yes	-	
Telecom' mode	Yes	-	
'Multi Frequency' mode	Yes	Yes	
‘Sequence' mode	Yes	-	
DC Bias Current	1mA – 1A (internal) Up to 125A (using 3265B)	1mA – 1A (internal) Up to 125A (using 3265B)	Up to 25A per unit
Printer Output	Yes	Yes	
GPIB Interface	Yes	Yes	
Measurement Speed	Up to 20 measurement/sec	Up to 20 measurement/sec	

Accuracy, Speed and a complete range of Measurement functions.... The right combination

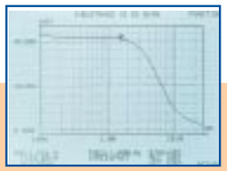
Wayne Kerr Electronics provides a full compliment of measurements, which can test a wide range of Inductors and Transformers. Basic measurements such as Impedance (Z), Phase Angle (ϕ), Inductance (L), Capacitance (C), DC Resistance (Rdc), AC Resistance (Rac), Quality Factor (Q) and Dissipation Factor (D), are complemented by advanced measurements, Turns Ratio (TR), Primary and secondary Leakage Inductance, Interwinding Capacitance, Insulation Resistance, Insertion Loss (IL) and Return Loss (RL).

In some applications speed of measurement is critical. The Wayne Kerr Electronics range of magnetic and inductance analyzers can deliver up to 20 measurements per second whilst maintaining measurement accuracy and integrity.

In Multi-Frequency mode the user is able to make measurements at a number of fixed frequencies and present the results in tabular form, and against preset limits

Test under real operating conditions with up to 125 Amps of DC Bias Current

The 3265B DC Bias Unit provides up to 25Amps of DC bias current in steps 0.025Amps. Use five in parallel and 125Amps can be achieved. In addition both analyzers can provide an internal DC bias from 1mA to 1Amp. The 3265B has a safety interlock system to protect the user against back EMF's. The unit is also fully protected against 'overtemperature', 'excess voltage drop' and 'sense lead failure'.



Printed output of the test results

Using the parallel centronics interface the user can directly print test results including graphs for further analysis and storage. In addition, via the IEEE488 interface the instrument can be controlled automatically from a PC controller. LabVIEW™ drivers are available on request or via our web site - www.waynekerrtest.com, providing a base from which a user can develop a specific test application.

Binning function allows the user to specify up to 10 bins sorting by either absolute or percentage terms.

Value for money from the leader in component test

Delivering the legendary Wayne Kerr performance and considerable functionality, Wayne Kerr component analyzers also offer excellent value for money and will appeal to those users for whom price/performance is of paramount importance.

Precision Magnetics Analyzer 3260B Specification

MEASUREMENT PARAMETERS

Any of the following parameters can be measured and displayed:

Impedance mode

Inductance (L), Impedance (Z), Rdc and Capacitance (C).
Series or parallel equivalent circuit
Loss term: Quality factor (Q), Dissipation factor (D), Rac and angle, Analogue scale (bargraph) with nominal, absolute and % modes

Handler mode

Enables existing 4-wire scanners to be used
Functions as for impedance mode with the addition of turns ratio

Transformer mode

Rdc of each winding, Primary or Secondary Leakage Inductance and Q, Turns Ratio, Interwinding Capacitance and Leakage Inductance. 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 (100Hz to 20kHz). Values of line impedance (Zo) and termination (Rt) 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 vs 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 8 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

20Hz to 3MHz Interwinding C minimum frequency 1kHz

Steps

Increments of 1% or better across range 1200 frequencies approx. Accuracy of selected frequency ±0.01%

Drive level

Source impedance 50Ω
1mV to 10V rms into open circuit
50µA to 200mA rms into short circuit
ALC maintains level applied to DUT at ±2%, ±1mV of set voltage or ±2% ±0.1mA of set current.

DC bias current

1mA to 1A dc is available from internal, fast settling bias supply over full frequency range
Voltage compliance 20V minimum
Safety interlock provision

DC resistance

Low test level 100mV
Short circuit current 10mA

Insulation (option)

Test voltages of 100, 200 or 500V dc. User selectable
Voltage accuracy ±3%
For user safety, short circuit current is limited to <2mA

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 16dBm
Test time varies with level
Zo/Rt 50 - 2000Ω
Test time < 1.5s typical

MEASUREMENT SPEEDS

For impedance, turns ratio, dc resistance and insulation
4 speeds selectable: MAXimum, FAST, MEDium and SLOW
MAX (25 measurements per second) for component sorting under IEEE 488.2 remote control.
FAST Approximately 10 measurement per second.
SLOW Approximately 1 per second for increased stability and accuracy

MEASUREMENT RANGES

R 0.01mΩ to >2GΩ*
L 0.1nH to >1000H*
C 5fF to >1F*

ACCURACY

Inductance/Rac/Z/Cp ±0.1%**
Q ±0.1% (Q+1/Q)**
D ±0.001 $(1+D^2)$**
Turns ratio ±0.1%**
Rdc ±0.5%
Insulation ±5% (500V test)

Insertion Loss±0.1dB
Return Loss±1dB
Basic accuracy varies with frequency, Zo, Rt, range and level.

* Varies with measurement speed
** Varies with frequency and option chosen

GENERAL DATA

Input specification

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

Display

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

Measurement connections

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

Remote control (option)

Conforms to GPIB (IEEE-488.2) 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 150mm (6“)
Width 440mm (17 ⅜“)
Depth 520mm (20 ½“)
Weight 11kg (24lbs 4oz.)

ORDER CODES/OPTIONS

IJ3260B
Precision Magnetics Analyzer
Supplied with User Manual, power cable, spare fuses, safety interlock jack

Options

/N Insulation resistance test
/G Analysis function (graphs)
/T LF Telecom function
/D Binning function

Accessories

1EXA20230
Rack mounting kit. 3U x full width

1EVA40100
Kelvin clips (fine jaws).
2 sets recommended for transformer tests

1EVA40180
Kelvin clips (large jaws)

1EV1006
BNC to 4-terminal component fixture.
Recommended above 500kHz

1EV1505
4-terminal lead set.
2 set recommended for power transformers tests

A40120
SMD Tweezers

Inductance Analyzer 3255B Specification

MEASUREMENT PARAMETERS

Any of the following parameters can be measured and displayed:

Impedance mode

Inductance (L), Impedance (Z), Rdc and Capacitance (C).
Series or parallel equivalent circuit
Loss term: Quality factor (Q), Dissipation factor (D), Rac and angle, Turns Ratio
% difference mode and relative mode on major terms

Multi-Frequency mode

Measurement parameters and test conditions set using measurement mode. Up to 8 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

Frequency range

20Hz to 500kHz

Steps

Independent settings are available for different tests. At least 800 frequencies, which may be selected via keyboard or GPIB
Basic accuracy of selected frequency ±0.01%

Drive level

Source impedance 50Ω
1mV to 10V rms into open circuit
50µA to 200mA rms into short circuit
ALC ensures level at DUT is ±2%, ±1mV of set voltage or ±2% ±0.1mA of set current, reduces to ±4% below 100Hz

DC bias current (Option)

1mA to 1A dc is available from internal, fast settling bias supply over full frequency range
Voltage compliance 14V minimum
DC Accuracy 2% ±0.25 mA
Enabling DC bias inherently reduces measurement accuracy.
Safety interlock

DC resistance

Low test level 100mV
Short circuit current 10mA

Bin handler mode (option)

Sort to 1 to 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

MEASUREMENT SPEEDS

For impedance, turns ratio, dc resistance
4 speeds selectable for all functions: MAXimum, FAST, MEDium and SLOW. Maximum for remote control.
Up to 20 measurements per second for test frequency ≥100Hz. Selecting slower speeds improves accuracy and display resolution

MEASUREMENT RANGES

L 1nH to 1000H
Z 0.05m to >2MΩ
C 0.01pF to >250mF
Rdc 0.5mΩ to 50kΩ
Turns Ratio 100:1 to 1:100

ACCURACY

L/C/Z/Turns Ratio ±0.25%
Q ±0.25% (Q+1/Q)
D ±0.0025 ($1+D^2$)
Rdc ±0.5% ±1m0hm

Note: Ranges and accuracy vary with measurement speed, frequency and options chosen

GENERAL DATA

Input specification

Input voltage
230V AC ±10% or 115V AC ±10% (selectable)
Frequency 50/60 Hz
VA rating 150VA
Input fuse rating
230V operation - 1A “T” type
115V operation - 2A “T” type

Display

High contrast black and white LCD module 320 x 240 dot with CFL back lighting. Visible area 115 x 86mm.
Viewing angle 45°

Measurement connections

4 front panel BNC sockets
4-wire (Kelvin) measurements with screen at ground potential.
Equivalent circuit symbols on screen

Printer output

Centronics/parallel printer port

Remote control (Option)

Designed to GPIB (IEEE-488.2) and SCPI 1992.0

Environmental conditions

Temperature range

Storage -40°C to +70°C
Operating 0°C to 40°C
Full Accuracy 15°C to 35°C

Altitude up to 2000m
Relative humidity: up to 80% non-condensing
Installation category: II (in accordance with IEC664)
Pollution degree: 2 (mainly non-conductive)
This equipment is intended for indoor use only in non-explosive, non-corrosive atmosphere

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 150mm (6“)
Width 440mm (17 ⅜“)
Depth 520mm (20 ½“)
Weight 11kg (24lbs 4oz.)

Summary specification. A full specification is available on request

ORDER CODES/OPTIONS

1J3255B
Inductance Analyzer (20 Hz - 500 kHz)
Supplied with User Manual and 2m AC power cable

Options

/A 1 mA - 1 A Internal DC Bias
/B IEEE-488 interface
/D Binning function

Accessories

1EVA40100
Kelvin clips (fine jaws). Recommended

1EV1505
4-terminal lead set.

1EVA40180
Kelvin clips (large jaws)

A40120
SMD tweezers

1EXA20230
Rack mounting kit. 3U x full width

DC Bias Unit 3265B Specification

Description

25A DC bias unit
Maximum compliance voltage (<12kHz). 11Vdc (at 0.25Vac drive level). 10V compliance at 1 Vac drive level. Where f>12Khz deduct 0.5V.
Must be used in conjunction with either a 3260B or 3255B

Applications

Permits measurement analysis of wound components with levels of DC bias current higher than the standard 1A

Variable measured

In impedance mode: L, Z, R, Q, D.
Not applicable to Rdc, or transformer measurements

Measured frequency range

3255B 20Hz to 500kHz
3260B 20Hz to 1 MHz

Basic accuracy

± 1%
Varies with measurement speed.
Varies with frequency and option chosen.

Measurement terminals

2-terminals measurement via M8 studs. 4-terminal measurement via Kelvin leads and M8 studs.
Measurement terminals internally protected by 1.6A fuses against normal inductor back-EMF or accidental disconnection of inductor.
Front panel fuses easily replaced

Control connections

1^2C bus link controls application of DC current and monitors status of analyzer. Status data includes ‘excessive voltage drop’ and ‘overtemperature’

Optional facilities

3265B bias units may be paralleled.
Maximum 5 units giving 125A

Interlock

Bias safety interlock socket on rear panel of analyzer provides door lock and closed control lines

Temperature range

Storage: -40°C to + 70°C
Operating: 0°C to + 40°C (20A max)
Full accuracy: 15°C to + 30°C (25A max)

Power supply

Universal 90 to 255V ac
47 to 63Hz
Input current 9A rms max.
Power factor >0.9
Unit powers up automatically when connected to a powered analyzer
Isolating switch provided

Dimensions

Height 190mm (7 ½“)
Width 440mm (17 ⅜“)
Depth 520mm (20 ½“)
Weight 15kg (33lbs)

Cooling
Fan cooled. Intake front, exhaust rear.
Fan filter accessible on front panel.
Overtemperature trip provided

ORDER CODE

IJ3265B
25A DC bias unit 3265B
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

1EVA40100
Kelvin clips leads (fine jaws).

1EVA40180
Kelvin clips leads (large jaws)

4-324-6009
Power transfer bus bars
(2 each per unit in parallel)

HMDEC10
Filter pad (washable)

Wayne Kerr Electronics

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