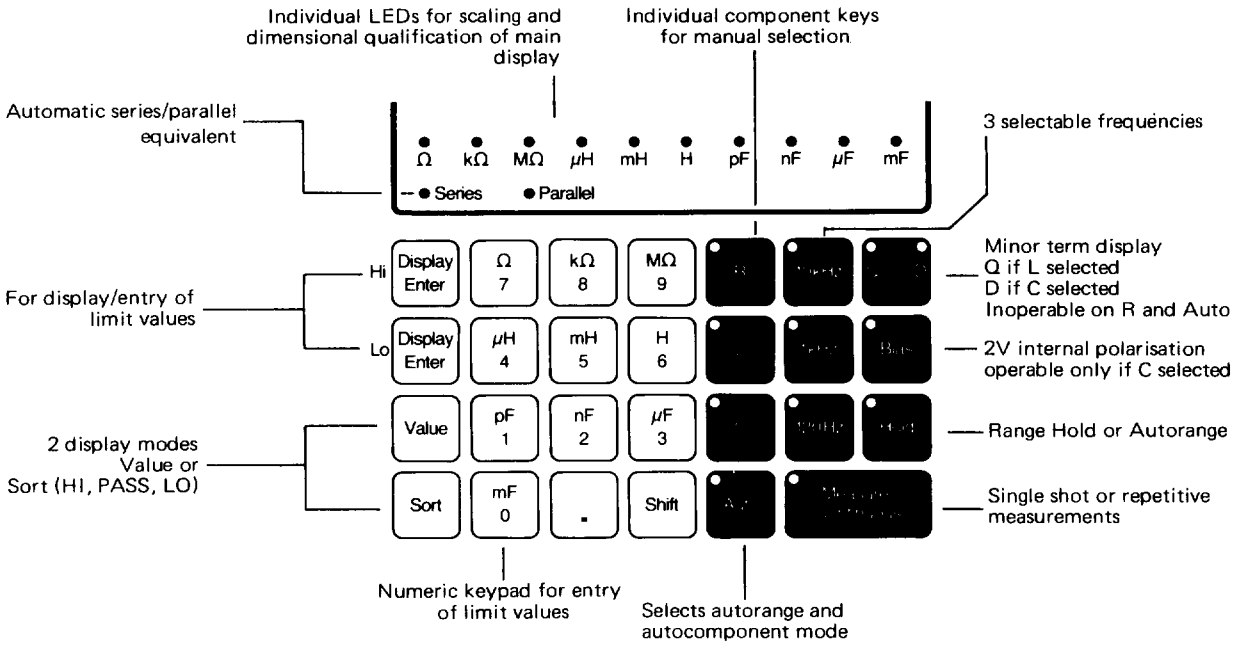
The Wayne Kerr 4225

Simple to Operate Benchtop Automatic LCR Meter

The 4225 is a low cost, fully automatic AC component meter with many features only found in expensive component analyzers. The 4225 offers 3 test frequencies with an accuracy of 0.25% over a wide range of Inductance, Resistance and Capacitance values. Minor terms Q or D are displayed at the touch of a button and a plain language statement is given of PASS - HI - LO when the component measurement is compared to pre-set limits.

Based on a powerful microprocessor, and backed by over 30 years constant development of component and network analysis techniques, the Wayne Kerr 4225 sets a new standard for cost effectiveness and reliability. The measuring circuit automatically determines the type of component presented to the integral test fixture and allows true 'hands off' operation, built in auto-ranging also ensuring fully automatic measurement over 8 decades for each component type.

Components are measured using **a 4 terminal fixture.** Errors due to contact resistance, and connecting lead impedances which are in series



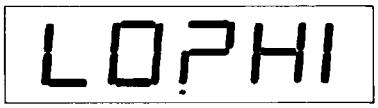
with the component will be effectively cancelled by this technique. In addition, a fifth terminal gives a guard facility to remove unwanted shunt capacitance and resistance, which is of critical importance when small values of capacitance are being measured. A built-in trim control gives final adjustment for precision measurement.

Charged Capacitor Protection. Up to 500 V stored charge on capacitors with values below 2 μF causes no damage to the 4225. However, larger values to 50 mF must be limited to 50 V charge.

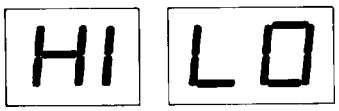
Capacitors can be polarised by selecting the 'BIAS' button. This applies 2V from an internal source which is inhibited if L, R or Auto is selected.

Series/Parallel Measurement. The 4225 automatically selects the best form of display for major and minor terms. Up to 1000 Ω AC impedance series equivalent circuit is displayed. Above this value the display is for a parallel circuit.

Limits Measurement. With the keypad, enter the high limit in digits, followed by the units (Ω, H, mF, etc) after touching the shift key. Repeat with the low limit figure. If an error has been made (e.g. the low limit is set to be greater than the high limit) when the 'Sort' key is touched for a limits measurement, the display will read



If valid limits have been set, the 'Sort' key will initiate one of these plain language displays after the component has been connected



Measurement of Component Value. If a component of any type is connected and the 'Auto' key is touched, the 4225 enters the automatic search mode for component type and range of value. During this brief period, the display indicates 'Autorange'

The range setting can be locked by touching the 'Hold' key for rapid repeat measurements.

In the event that another component is inserted well outside the range of measurement the 'Overrange' display occurs.

All components are measured at 250 mV rms from 100Ω source at approximately 650 m sec intervals when the 'Continuous' key is selected. The applied voltage is set at this level to ensure that transistor and diode junction capacitances can be measured with accuracy.

Specifications

Measurement Functions:
L, C, R, Q, D and auto component mode.

Measurement Frequencies:
120Hz, 1.02kHz, 10.2kHz
(100Hz, 1kHz, 10kHz on 50 Hz version)
accuracy ±0.01%.

Measurement level:
250mV (±50mV) from 100Ω.

Measurement Speed:
Typically 650 m sec.

Display:
5 digit LED with decimal point plus individual LEDs for units/multipliers.

Connection:

4 terminal via integral test fixture. Includes capacitor trim control for precise measurements of small capacitors. The 1042 Fixture Adaptor which includes kelvin leads is also available as an option.

Automatic Functions:
Auto range, with manual lock. Series/Parallel equivalent circuit. Auto component mode (R, L or C) with manual override.

Accuracy

Resistance (Q <0.1)			
100Hz/120Hz	0 to 1MΩ	±0.25%	±2mΩ
1kHz	0 to 1MΩ	±0.25%	±2mΩ
10kHz	0 to 300kΩ	±0.25%	±50mΩ
Resolution	1mΩ		
Max Display	99.000MΩ		
Capacitance (D <0.1)			
100Hz/120Hz	0 to 1600μF	±0.25%	±5pF
1kHz	0 to 160μF	±0.25%	±0.5pF
10kHz	0 to 1.6μF	±0.25%	±0.05pF
Resolution	0.01pF		
Max Display	99.000mF		
Inductance (Q>10)			
100Hz/120Hz	0 to 1600H	±0.25%	±5μH
1kHz	0 to 160H	±0.25%	±0.5μH
10kHz	0 to 1.6H	±0.25%	±0.5μH
Resolution	10nH		
Max Display	9900.0H		

Dissipation Factor		
100Hz/120Hz	±0.0025(1 + D^2)	1.6nF to 1600μF
1kHz	±0.0025(1 + D^2)	160pF to 160μF
10kHz	±0.0025(1 + D^2)	160pFto 8μF
Resolution	0.0001	
Max Display	9900.0	
Q Factor		
100Hz/120Hz	±0.25(Q + 1/Q)%	1.6mH to 1600H
1kHz	±0.25(Q + 1/Q)%	160μH to 160H
10kHz	±0.25(Q + 1/Q)%	320μH to 1.6H
Resolution	0.0001	
Max Display	9900.0	

Operating Conditions

Temperature Range:		
Storage	−20°C to +60°C	0°F to 140°F
Operation	0°C to +50°C	32°F to 122°F
For full accuracy	+10°C to +30°C	50°F to 86°F

Power Supply:
115VAC/230VAC 60Hz
50Hz version also available

Overall Dimensions:
400 × 270 × 150 mm

Weight:
3.6kg

In keeping with rapidly developing technology the Company is continually improving its products and therefore reserves the right at any time to alter specifications or designs without prior notice.

WAYNE KERR

Wayne Kerr Instruments Ltd.
Durban Road
Bognor Regis
West Sussex PO22 9RL
Tel: (0243) 825811
Telex: 86420 WAYRENG

Wayne Kerr Inc.
600 West Cummings Park
Woburn MA 01801
United States of America
Tel: (617) 938 8390
Telex: 6817257 WKERR WOBN

Wayne Kerr GmbH
Domstrasse 58—62
D6050 Offenbach/Main
Federal Republic of Germany
Tel: (069) 810778/9
Telex: 4185470 WAYK D.