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*Professional integrity at its Best!*

## 100KHz Handheld LCR Meter

### The First One on the Market



#### MT4080A/MT4080D Features

- Measurement parameters : Z, L, C, DCR, ESR, D, Q, and  $\theta$
- Test conditions : 100Hz, 120Hz, 1KHz, 10KHz, 100KHz(MT4080 only), 1Vrms, 0.25Vrms, 0.05Vrms 1Vdc ( for DCR )
- 0.2% basic accuracy
- Dual LCD display
- Very quickly response
- Fully auto/manual selection
- DC resistance measurement
- Rechargeable battery/ AC powered
- User friendly
- Infrared Interface ( RS 232C)

The MT4080A/MT4080D LCR Meter is the first handheld meter of this type on the Market, with a wide range of test frequencies up to 10KHz (MT4080D) or 100KHz (MT4080A), and many measurement parameters including Z, L, C,DCR, ESR, D, Q, and  $\theta$  as well. The MT4080A/MT4080D is design for both component evaluation on the production line and fundamental impedance testing for bench-top applications. With a build-in direct test fixture you can test the lead components very easily. The 4-wire test clip can give a convenient connection to larger components and assemblies with the accuracy of 4-wire testing. The LCR meter offers fast, reliable, and versatile testing at low cost. Furthermore, the optional RS232C interface (IrDA) is an attractive, cost-effective solution for quality assurance and incoming inspection operations, making the MT4080A/MT4080D is the most advanced handheld LCR meter available on the market today.

#### ESR measurement

In today's switching mode power supply design, higher frequency is reached everyday to take advantage of the size and output power barrier. To ensure the performance of the circuit, the Equivalent Serial Resistance (ESR) in a capacitor is the key element determining efficiency and performance. With mt4080a/Mt4080D the user can quickly check the ESR of a capacitor up to 100KHz or 10KHz without hesitation.

#### Built-in infrared Port

MT4080A/MT4080D comes with a built-in infrared port to allow communication with a personal computer. With the fully Remote Control Command (RCC) support, both units are able to act as an automatic LCR testing system-this is especially applicable in automatic Q.A and I.Q.C testing. The user is able to control the measurements and get the measured values

through the IrDA port. Remote-Binning feature, easily sorting the components, is combined with remote-binning software and infrared port.

#### SMD test probe(optional)

Surface-mount components are usually tiny and have no wire leads, making it more difficult to test surface-mount devices than conventional components. The TL08 SMD test probe gives users an easy way to conduct SMD component testing. The uniquely designed SMD test probe can also be used to test conventional components if the wire leads are too short to insert into the test terminals.

#### Open and short calibration

In the world of LCR meters, open and short calibrations are important procedures before making any measurements, especially when user changes the testing frequency and level. Therefore, very fast open and short calibrations are the key factors to the user. Within just 10 seconds, the user can perform open or short calibrations at any frequency and level that s/he desires.

#### Transformer measurement

To qualify xDSL transformers, you can measure the primary inductance or coupling capacitance at 10KHz, and leakage inductance at 100KHz with lower test voltage. You can also measure the DC-resistance of primary and secondary with the standard DCR function.

## MT4080A/MT4080D Specifications

### Measurement Functions

Measurement parameters:

Z : Absolute value of impedance

L : Inductance

C : Capacitance

DCR: Direct current resistance

ESR: Equivalent series resistance

D : Dissipation factor

Q : Quality factor

$\theta$  : Phase angle

Combinations

DCR	Z	Ls,Cs	Lp,Cp
i@	$\theta$	D,Q,ESR	D,Q

Ranging: Auto-Range and Range-Hold

Relative: Mode

Cal: Open/Short calibration

RS232C:

Connector Type: IrDA

Transmission Signal: Tx and Rx

Flow Control: XON/XOFF

### Test Signal

Frequency: 100Hz, 120Hz, 1KHz, 10KHz, 100KHz(MT4080A only) $\pm 0.1\%$  ( for both A&D )

Level: 1Vrms, 0.25Vrms, 0.05Vrms, 1Vdc(for DCR),  $\pm 5\%$

Output Impedance: 100 $\Omega$ ,  $\pm 5\%$

Display Range

Parameter	Range
Z	0.001 $\Omega$ To 9999M $\Omega$
L	0.001 $\mu$ H To 9999H
C	0.001PF To 9999F
DCR	0.000 $\Omega$ To 9999M $\Omega$
ESR	0.000 $\Omega$ To 9999 $\Omega$
D	0.000 To 9999
Q	0.000 To 9999
$\theta$	-180.0 $\phi$ X To 180.0 $\phi$ X

### Z Accuracy:

Zx	20M ~ 10M( $\Omega$ )	10M ~ 1M ( $\Omega$ )	1M ~ 100K ( $\Omega$ )	100K ~ 10 ( $\Omega$ )	10 ~ 1 ( $\Omega$ )	1 ~ 0.1 ( $\Omega$ )
Freq.						

DCR	2% jÓ1 ❶	1% jÓ1	0.5% jÓ1	0.2% jÓ1	0.5% jÓ1	1% jÓ1 ❶
100Hz						
120Hz						
1KHz						
10KHz	5% jÓ1 ❶	2% jÓ1				
100KHz (4080A)	NA	5%jÓ1 ❶	2%jÓ1	0.4% jÓ1	2%jÓ1	5%jÓ1 ❶

i@

**C Accuracy:**

100Hz	79.57pF ? 159.1pF	159.1pF ? 1.591nF	1.591nF ? 15.91nF	15.91nF ? 159.1uF	159.1uF ? 1591uF	1591uF ? 15.91mF
	2% Y© 1 ❶	1% Y© 1	0.5% Y© 1	0.2% Y© 1	0.5% Y© 1	1% Y© 1 ❶
120Hz	66.31pF ? 132.6pF	132.6pF ? 1.326nF	1.326nF ? 13.26nF	13.26nF ? 132.6uF	132.6uF ? 1326uF	1326uF ? 13.26mF
	2% Y© 1 ❶	1% Y© 1	0.5% Y© 1	0.2% Y© 1	0.5% Y© 1	1% Y© 1 ❶
1KHz	7.957pF ? 15.91pF	15.91pF ? 159.1pF	159.1pF ? 1.591nF	1.591nF ? 15.91uF	15.91uF ? 159.1uF	159.1uF ? 1.591mF
	2% Y© 1 ❶	1% Y© 1	0.5% Y© 1	0.2% Y© 1	0.5% Y© 1	1% Y© 1 ❶
10KHz	0.795pF ? 1.591pF	1.591pF ? 15.91pF	15.91pF ? 159.1pF	159.1pF ? 1.591uF	1.591uF ? 15.91uF	15.91uF ? 159.1uF
	5% Y© 1 ❶	2% Y© 1	0.5% Y© 1	0.2% Y© 1	0.5% Y© 1	1% Y© 1 ❶
100KHz (4080A)	NA	0.159pF ? 1.591pF	1.591pF ? 15.91pF	15.91pF ? 159.1nF	159.1nF ? 1.591uF	1.591uF ? 15.91uF
	NA	5% Y© 1 ❶	2%Y© 1	0.4%Y© 1	2%Y© 1	5% Y© 1 ❶

i@

**L Accuracy:**

100Hz	31.83 KH ? 15.91 KH	15.91 KH ? 1591 H	1591 H ? 159.1 H	159.1 H ? 15.91 mH	15.91 mH ? 1.591 mH	1.591 mH ? 159.1 uH
	2% Y© 1 ❶	1% Y© 1	0.5% Y© 1	0.2% Y© 1	0.5%Y© 1	1% Y© 1 ❶
120Hz	26.52 KH ? 13.26 KH	13.26 KH ? 1326 H	1326 H ? 132.6 H	132.6 H ? 13.26 mH	13.26 mH ? 1.326 mH	1.326 mH ? 132.6 uH
	2% Y© 1 ❶	1% Y© 1	0.5% Y© 1	0.2% Y© 1	0.5% Y© 1	1% Y© 1 ❶
1KHz	31.83 KH ? 15.91 KH	15.91 KH ? 1591 H	1591 H ? 159.1 H	159.1 H ? 15.91 mH	15.91 mH ? 1.591 mH	1.591 mH ? 15.91 uH
	2% Y© 1 ❶	1% Y© 1	0.5% Y© 1	0.2%Y© 1	0.5%Y© 1	1% Y© 1 ❶
10KHz	318.3 H ? 159.1H	159.1 H ? 15.91 H	15.91 H ? 1.591 H	1.591 H ? 159.1 uH	159.1 uH ? 15.91 uH	15.91 uH ? 1.591 uH
	5% Y© 1 ❶	2% Y© 1	0.5% Y© 1	0.2%Y© 1	0.5% Y© 1	1% Y© 1 ❶
i@ 100KHz	31.83 H ? 15.91 H	15.91 H ? 1.591 H	1.591 H ? 159.1 mH	159.1 mH ? 15.91 uH	15.91 uH ? 1.591 uH	1.591 uH ? 0.159 uH
	NA	5% Y© 1 ❶	2%Y© 1	0.4% Y© 1	2%Y© 1	5% Y© 1 ❶

(4080A)						
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**D Accuracy:**

Zx  Freq.	20M ~ 10M (Ω)	10M ~ 1M (Ω)	1M ~ 100K (Ω)	100K ~ 10 (Ω)	10 ~ 1 (Ω)	1 ~ 0.1 (Ω)
100Hz	±0.020	±0.010	±0.005	±0.002	±0.005	±0.010
120Hz	①					①
1KHz						
10KHz	±0.050 ①	±0.020				
100KHz (4080A)	NA	±0.050 ①	±0.020	±0.004	±0.020	±0.050 ①

**Q. Accuracy:**

Zx  Freq.	20M ~ 10M (Ω)	10M ~ 1M (Ω)	1M ~ 100K (Ω)	100K ~ 10 (Ω)	10 ~ 1 (Ω)	1 ~ 0.1 (Ω)
100Hz	±0.046	±0.523	±0.261	±0.105	±0.261	±0.523
120Hz	①					①
1KHz						
10KHz	±0.615 ①	±0.046				
100KHz (4080A)	NA	±0.615 ①	±0.046	±0.209	±0.046	±0.615 ①

Note :

- 1.The accuracy applies when the test level is set to 1Vrms.
- 2.Ae multiplies 1.25 when the test level is set to 250mVrms.
- 3.Ae multiplies 1.50 when the test level is set to 50mVrms.
- 4.When measuring L and C, multiply Ae by  $\sqrt{1 + Dx^2}$  if the  $Dx \leq 0.1$ .

\* Ae is not specified if the test level is set to 50mV.

**D Accuracy**

D accuracy De is given as

$$De = \pm \frac{Ae}{100}$$

Accuracy applies when Dx (measured D value)  $\leq 0.1$

When  $Dx > 0.1$ , multiply De by (1+Dx)

**Q Accuracy**

Q accuracy is given as

$$Qe = \pm \frac{Qx^2 \cdot De}{1 + Qx \cdot De}$$

Where, Qx is the measure Q value, De is the relative D accuracy

Accuracy applies when  $Qx \cdot De < 1$

**θ Accuracy**

θ accuracy θ is given as

$$\theta_e = \frac{180}{\pi} \cdot \frac{Ae}{100} [\text{deg}]$$

**Measuring Speed**

Fast : 4.5 meas. /sec

Slow : 2.5 meas. /sec

**General:**

Temperature : 0°C to 40°C (Operating), 20°C to 70°C (Storage)  
Relative Humidity : Up to 85%  
Battery Type : NiMh or Alkaline (2AA size)  
Battery Charge : Constant current 150 mA approximately  
Battery Operation Life : 2.5 Hours typical  
AC Operation : 110V/220V AC, 60/50Hz with proper Adapter  
Low Power Warning : under 2.2V  
Dimensions : 6.9" x 3.4" x 1.9" (LxWxH) (174mm x 86mm x 48mm)  
Weight : 470g

**Order Information****MT4080A**

100Hz to 100KHz Handheld LCR Merter

**MT4080D**

100Hz to 10KHz Handheld LCR Merter

**Standard Accessories**

Shorting bar  
DC 6V power adapter  
AA-Size Ni-Mh rechargeable battery

**Optional Test Fixtures/Accessories**

TL08A SMD test probe  
TL08B 4-wire test chips  
TL08C 4-wire Kelvin chips  
Carry case  
RS232 To Infrared Adapter



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