

LCR Meter

MODEL 11021 / 11021-L

Key Features:

- Test Parameters: L/C/R/IZI, Q/D/ESR/X/ θ
- Test frequencies: 100Hz, 120Hz, 1kHz and 10kHz (9.6kHz) (11021)
1kHz, 10kHz, 40kHz, 50kHz (11021-L)
- Basic accuracy: 0.1% (11021), 0.2% (11021-L)
- 0.1m Ω ~99.99M Ω measurement range, 4 1/2 digits resolution
- Lower harmonic-distortion affection
- Fast measurement speed (75mS)
- Standard RS232 interface
- Optional GPIB & Handler interface
- Bin-sorting function
- Comparator and Pass/Fail alarming beeper function
- Text mode 40x4 matrix LCD display
- Open/Short zeroing
- Programmable trigger delay time is convenient for measurement timing adjustment in automatic production
- Friendly user interface
- On-line firmware refreshable (Via RS232)
- Input protection (1 joule)



LCR METER

MODEL 11021 /11021-L

The Chroma 11021/11021-L LCR Meter is Chroma's most cost-effective digital LCR Meter, provides 100Hz, 120Hz, 1kHz, and 10kHz test frequencies for the 11021 and 1kHz, 10kHz, 40kHz, 50kHz test frequencies for the 11021-L. Standard RS232 interface, optional GPIB & Handler interface, high speed and stable measurement capabilities enable the Chroma 11021 can be used for both component evaluation on the production line and fundamental impedance testing for bench-top applications.

Lower Harmonic-Distortion Phase-Detection Technology

The 11021/11021-L(50kHz) uses lower harmonic-distortion phase-detection technology to reduce affection of measurement accuracy caused by hysteresis distortion in magnetic component or high dielectric-coefficient capacitor measurement, which is not provided in general low-end LCR meters. General low-end LCR meters use half period integration method as phase detector. The frequency spectrum of half period square wave is shown as figure 1 and 2, which non-ignorable 3rd, 5th order harmonics are included. For non-linear devices under testing, odd-order (3rd, 5th, 7th, ...) harmonics may occur in measured potential or current signals. Then, this phase-detection method will cause obvious accuracy error because of same low order harmonics are included in both unknown signal and phase-detect signal. The 11021/11021-L uses eight steps sine-wave multiplier as phase detector to reduce low-order harmonics affection to an ignorable level.

Bin-Sorting Function

The 11021/11021-L provides 8-bins sorting function with bin count statistics. It is very convenient for magnetic core sorting or capacitor sorting. And the bin count statistics can be used to

analysis distribution of tested results or production quality.

HI/GO/LO Comparator

The 11021/11021-L has a comparator function to judge HI/GO/LOW of capacitance measured results, and to judge GO/NG of D factor. And an alarming beeper for total GO/NG judge.

Trigger Delay Time

For large capacitance measurement in automatic production, a RC (meter output resistance and unknown capacitance) delay time for test signal transient is necessary. The 11021/11021-L provides trigger delay time for it, and is convenient for automatic equipment timing adjustment.

Input Protection

Un-discharged device (generally, a capacitor) under test is the most general reason causes destroy on a LCR Meter. The 11021/11021-L using an excellent input protection circuit to prevent it from this kind of damage.

Open/Short Zeroing

General low-end LCR meter just provides zero offset to substrate stray capacitance, residual resistance or residual inductance only for C, R, L measurement which can not accurately measure Q (quality factor) for L, R measurement and D (dissipation factor) for C measurement. The 11021/11021-L provides full open/short circuit zeroing function.



Chroma



SPECIFICATIONS

Model	11021	11021-L
Measurement Parameter		
Primary Display	L, C, R, Z	
Secondary Display	Q, D, ESR, Xs, θ	
Test Signals Information		
Test Level	0.25V / 1V, $\pm(10\% + 3\text{ mV})$	
Test Frequency	100Hz, 120Hz, 1kHz, 10kHz (9.6kHz)	1kHz, 10kHz, 40kHz, 50kHz
Frequency Accuracy	$\pm 0.25\%$	
Output Impedance (Typical)	Varies as range resistors 25, 100, 1K, 10K, 100K	
Measurement Display Range		
Primary Parameter	L: 0.01 μ H ~ 9.999kH, C: 0.01pF ~ 99.99mF, R, Z : 0.1m. ~ 99.99M Ω	
Secondary Parameter	Q: 0.1 ~ 9999.9, D: 0.0001 ~ 9999.9, θ : -180.00° ~ +180.00°	
Basic Accuracy (Note1)	$\pm 0.1\%$	
Measurement Time (1KHz) (Note2)		
Fast	Freq = 1K/10KHz: 75mS, Freq = 100/120Hz: 85mS	75mS
Medium	145mS	
Slow	325mS	
Trigger	Internal, Manual, External, Bus	
Display		
L, C, R, Z , Q, D, R, θ	40 x 4 (Character Module) LCD Display	
Function		
Correction	Open/Short zeroing	
Equivalent Circuit Mode	Series, Parallel	
Interface & Input/Output		
Interface	RS-232 (Standard), Handler & GPIB (Optional)	
Output Signal	Bin-sorting & HI/GO/LOW judge	
Comparator	Upper/Lower limits in value	
Bin Sorting	8 bin limits in %	
Trigger Delay	0 ~ 9999mS	
General		
Operation Environment	Temperature : 10°C ~ 40°C, Humidity < 90 % R.H.	
Power Consumption	50VA max.	
Power Requirement	90 ~ 125Vac or 190 ~ 250Vac, 48 Hz ~ 62 Hz	
Weight	Approx. 5 kg	
Size (W x H x D)	206 x 115 x 350 mm	

All specifications are subject to change without notice.

Note 1: 23 \pm 5°C after OPEN and SHORT correction, slow measurement speed. Refer to operation manual for detail measurement accuracy descriptions

Note 2: Measurement time includes sampling, calculation and judge test parameter measurement

Lower Harmonic-Distortion Phase-Detection Technology

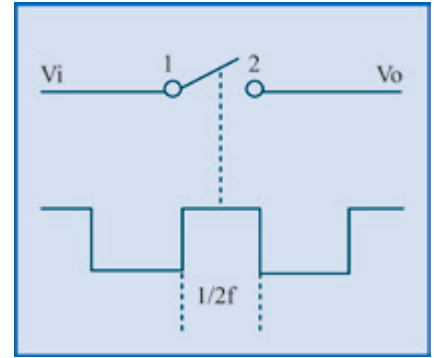


Figure 1

The frequency spectrum of half period square wave (general low-end LCR meters)

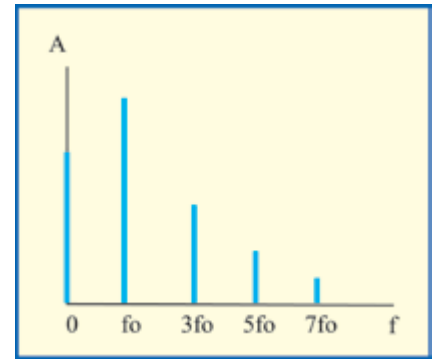
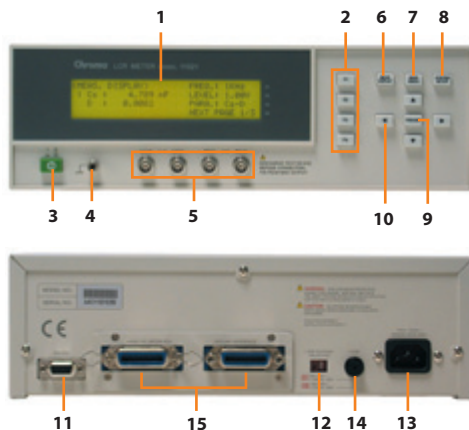


Figure 2

Non-ignorable 3rd, 5th order harmonics (11021 uses eight steps sin-wave multiplier)

PANEL DESCRIPTION



1. LCD Display
2. Function Keys
3. Power Switch
4. Ground Terminal
5. Unknown Test Terminals
6. MEAS DISPLAY Key
7. MAIN INDEX Key
8. SYSTEM SETUP Key
9. TRIGGER Key
10. Cursor Keys
11. RS232 Interface
12. Power Voltage Selector
13. AC Line Input
14. Fuse
15. GPIB and Handler Interface

ORDERING INFORMATION

- 11021 : LCR Meter 1kHz
- 11021 : LCR Meter 10kHz
- 11021-L : LCR Meter
- A110211 : Component Test Fixture
- A110212 : Component Remote Test Fixture
- A110104 : SMD Test Cable #17
- A110232 : 4 BNC Test Cable with Clip #18
- A110234 : High Frequency Test Cable
- A110235 : GPIB & Handler Interface
- A110236 : Rack Mountain Kit
- A110242 : Battery ESR Test Kit
- A133004 : SMD Test Box
- A165009 : 4 BNC Test Cable with Probe

Developed and Manufactured by :

CHROMA ATE INC.
致茂電子股份有限公司
HEADQUARTERS
66 Hwaya 1st Rd., Kueishan
Hwaya Technology Park,
Taoyuan County 33383,
Taiwan
Tel: +886-3-327-9999
Fax: +886-3-327-8898
http://www.chromaate.com
E-mail: info@chromaate.com

CHINA
CHROMA ELECTRONICS
(SHENZHEN) CO., LTD.
8F, No.4, Nanyou Tian An
Industrial Estate, Shenzhen,
China PC: 518052
Tel: +86-755-2664-4598
Fax: +86-755-2641-9620

JAPAN
CHROMA JAPAN CORP.
472 Nippa-cho, Kouhoku-ku,
Yokohama-shi, Kanagawa,
223-0057 Japan
Tel: +81-45-542-1118
Fax: +81-45-542-1080
http://www.chroma.co.jp
E-mail: info@chromaate.com

U.S.A.
CHROMA SYSTEMS
SOLUTIONS, INC.
19772 Pauling, Foothill Ranch,
CA 92610
Tel: +1-949-600-6400
Fax: +1-949-600-6401
http://www.chromausa.com
E-mail: sales@chromausa.com

EUROPE
CHROMA ATE EUROPE B.V.
Morsestraat 32, 6716 AH Ede,
The Netherlands
Tel: +31-318-648282
Fax: +31-318-648288
http://www.chroma.eu.com
E-mail: sales@chroma.eu.com

Worldwide Distribution and
Service Network