

MODEL 11021

Key Features :

- Test Parameters: L/C/R/IZI, Q/D/ESR/X/θ
- Test frequencies: 100Hz, 120Hz, 1kHz and 10kHz (9.6kHz)
- Basic accuracy: 0.1%
- 0.1mΩ~99.99MΩ 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

The Chroma 11021 LCR Meter is Chroma's most cost-effective digital LCR Meter, provides 100Hz, 120Hz, 1kHz, and 10kHz test frequencies. 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 Chroma 11021 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 Chroma 11021 uses eight steps sine-wave multiplier as phase detector to reduce low-order harmonics affection to an ignorable level.

Bin-Sorting Function

The Chroma 11021 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 Chroma 11020 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 Chroma 11021 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 Chroma 11021 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 stay 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 Chroma 11021 provides full open/short circuit zeroing function.



Chroma



Specification

Model	11021
Measurement Parameter	
Primary Display	L, C, R, Z
Secondary Display	Q, D, ESR, X, θ
Test Signals Information	
Test Level	0.25V / 1V, $\pm(10\% + 3\text{ mV})$
Test Frequency	100Hz, 120Hz, 1kHz, 10kHz (9.6kHz)
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, 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
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

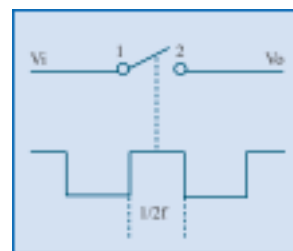


Figure 1
The frequency spectrum of half period square wave

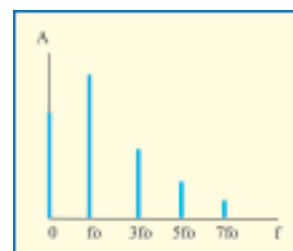
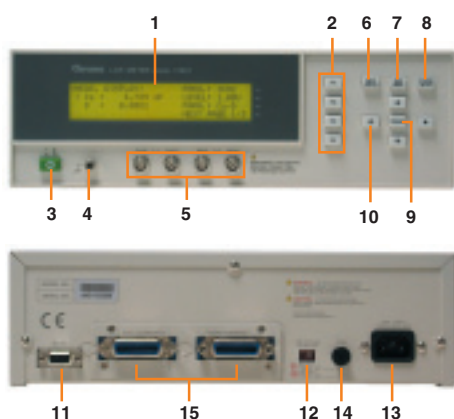


Figure 2
Non-ignorable 3rd, 5th order harmonics

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
A110211	Component Test Fixture
A110212	Component Remote Test Fixture
A110104	SMD Test Cable #17
A110235	GPIB & Handler Interface
A110234	High Frequency Test Cable

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