

*Bench type, professional  
SD card real time data recorder*

# LCR + MULTIMETER

Model : DM-9972SD

*ISO-9001, CE, IEC1010*



**Lutron**

**LUTRON ELECTRONIC**

*The Art of Measurement*

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SD card real time data recorder

# LCR + MULTIMETER

Model : DM-9972SD

### DDMM FEATURES

- \* Real time Datalogger, save the into the SD memory card and can be downloaded to the Excel, extra software is no need.
- \* Real time Datalogger, it Built-in Clock (year/month/date/hour/minute/second), sampling time set from 2 seconds to 3600 seconds.
- \* Manual datalogger is available (set the sampling time to be 0 second).
- \* Meet IEC 1010 CAT III 1000 V, CAT IV 600 V safety requirement.
- \* LCD with green light backlight, easy reading.
- \* 6000 counts A/D, high resolution.
- \* Accepts SD memory cards of up to 32 GB capacity.
- \* Multi function measurement. DCV, ACV, DCA, ACA, Resistance, Frequency, Duty cycle, Diode, Continuity beeper.
- \* Max. & Min. measurement value with recall.
- \* Relative, Data hold.
- \* Auto range with manual range selection.
- \* V/A/Hz button, when execute the ACV, ACA function also can measure the frequency of signal.
- \* Both 10 A, mA, uA current are build fuse for safety consideration.
- \* 10 M ohm impedance for voltage circuit.
- \* Operates from 9 V (DC 1.5V AA/UM-3 X 6 PCs) batteries.
- \* Built-in overload protection for most ranges.
- \* Photo couple RS 232 computer serial interface.
- \* Uses durable, long-lasting components, enclosed in strong, weight ABS-plastic housing.
- \* Full line optional adapters : Clamp adapter, Tachometer adapter, Pressure adapter, Humidity Adapter, Sound level adapter, Anemometer adapter, Light adapter, EMF adapter.

### LCR FEATURES

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- \* Manual datalogger is available (set the sampling time to be 0 second).
- \* 6000 counts ADC resolution.
- \* High performance analog front end for impedance(Z) measurement.
- \* Support Z / DCR measurement for LCR mode.
- \* Four different test frequency are available : 100 Hz/120 Hz/1 KHz/10 KHz for L/C/R measurement.
- \* Test AC signal level : 0.5 V rms typically.
- \* Test range : (ex. F = 1 KHz)  
L : 600.0 uH to 60.00 H  
C : 600.0 pF to 600.0 uF  
R : 60.00Ω to 20.00 MΩ
- \* Min. source resistance : 120Ω typical.
- \* 6 ratio resistor range used for LCR mode.
- \* Support buzzer sound driver with driving pattern and frequency selectable.

### DDMM GENERAL SPECIFICATIONS

Display	97 mm x 56 mm large LCD display
Measurement	DCV, ACV, DCA, ACA, Resistance, Diode, Continuity beeper, Frequency, Duty cycle.
Datalogger	Auto 2 seconds to 3600 seconds
Sampling Time	Manual Push the data logger button once will save data one time.
Setting range	@ Set the sampling time to 0 seconds.
Data error no.	≤ 0.1% no. of total saved data typically.
SD card capacity	4 GB to 32 GB
A/D counts no.	6000 counts.
Range selection	Auto range with manual range selecting.
Special function	Relative measurement, Data hold,
Data hold	To freeze the display reading on the LCD display.
Power On/Off management	Auto power of or manual power off.
Memory recall	Records Maximum & Minimum readings with recall.
Relative measurement	To offset the measurement value.
V/A/Hz button	When execute the voltage or current function also can measure the frequency of signal.
Data output	RS 232 PC serial interface, photo couple.
Polarity	Automatic Switching, "-" indicates negative polarity.
Zero adjustment	Automatic.
Sampling time of display	Approx. 0.5 to 1 second.
Operating temperature	0 °C to 50 °C (32 °F to 122 °F),
Operating humidity	Max. 80% RH.
Power supply	DC1.5 V (AA) battery x 6 PCs or DC 9V adapter input * AC/DC Power adapter is optional.
Power consumption	Normal operation (w/o SD card save data) : Approx. DC 80 mA When SD card save the data : Will increase approx. DC 25 mA.
Dimension	292 x 236 x 100 mm (11.5 x 9.3 x 3.9 inch).
Weight	1450 g/3.19 LB (w.o battery).
Accessories Included	Red and Black Test Leads (CAT III 1Kv Test Leads).....1 Set 630 mA Spare Fuse.....1 PC Instruction Manual.....1 PC
Optional accessories	Full line adapters : ACA/DCA current adapter, Tachometer adapter, Humidity adapter, Pressure adapter, Light adapter, EMF adapter, Light adapter, EMF adapter, AC to DC 9V Adapter.....AP-9VA RS232 cable to D-Sub 9 connector.....UPCB-06 RS232 cable to USB connector.....USB-11 SD card.....SD-4GB Data Acquisition software.....SW-U801-WIN SW-E802

\* Appearance and specifications listed in this brochure are subject to change without notice.

### DDMM ELECTRICAL SPECIFICATIONS (23 ± 5 °C)

DC Voltage	
Range	600.0 mV /6 V/60 V/600 V /1000 V
Resolution	0.1 mV /0.001V /0.01V /0.1V/1 V
Accuracy	600 mV ± ( 0.5% + 2d ) 6 V, 60 V, 600 V, 1000 V ± ( 0.8% + 1d )
Input impedance	
Over load protection	600 mV range ± 380 DCV, 380 ACV other ranges ± 1000 DCV, 1000 ACV

AC Voltage ( True RMS )	
Range	600.0 mV /6 V/60 V/600 V /1000 V
Resolution	0.1 mV /0.001V /0.01V /0.1V/1 V
Accuracy	± ( 1% + 2d ) * Spec. are tested under 50/60 Hz.
Input impedance	
Over load protection	600 mV range ± 380 DCV, 380 ACV other ranges ± 1000 DCV, 1000 ACV

DC Current, AC Current ( True RMS )		
Range	10 A/6 A/600 mA/60 mA/6000 uA/600 uA	
Resolution	0.01 A/0.001 A/0.1 mA/0.01 mA/1 uA/0.1 uA	
Accuracy	DCA	ACA
	600 uA ± ( 0.5% + 2d ) ± ( 1% + 7d )	± ( 1% + 7d )
	6000 uA ± ( 0.5% + 2d ) ± ( 1% + 7d )	± ( 1% + 7d )
	60 mA ± ( 0.5% + 2d ) ± ( 1% + 7d )	± ( 1% + 7d )
	600 mA ± ( 0.5% + 2d ) ± ( 1% + 7d )	± ( 1% + 7d )
	6 A ± ( 1.5% + 5d ) ± ( 1.5% + 5d )	± ( 1.5% + 5d )
	10 A ± ( 1.5% + 2d ) ± ( 1.5% + 2d )	± ( 1.5% + 2d )
	* ACA spec. are tested under 50/60 Hz.	
Over load protection	10A range : 10A fuse. uA, mA range : 630 mA fuse.	

Diode ( Forward voltage, VF )	
Range	2.9 V DC.
Accuracy	± ( 0.5% + 2d )
Frequency	
Range	60 Hz/600 Hz/6 KHz/60 KHz/600 KHz/6 MHz/20 MHz
Resolution	0.01 Hz/0.1 Hz/0.001 KHz/0.01 KHz/0.1 KHz/0.001 MHz/0.01 MHz
Accuracy	± ( 0.5% + 2d )
Sensitivity	Min. 1 V rms, Max. 5 V rms.

OHMS	
Range	600 Ω /6 KΩ /60 KΩ /600 KΩ /6 MΩ /60 MΩ
Resolution	0.1Ω /0.001 KΩ /0.01 KΩ /0.1 KΩ /0.001 MΩ /0.01 MΩ
Accuracy	600 ohm : ± ( 1% + 2d ) 6K/60K/600K/6 M ± ( 1.5% + 2d ) 60 M ± ( 3% + 5d )
Over load protection	± 350 DCV, 350 ACV.

Continuity Beeper  
Beeper will sound if measured resistance less than 20 ohm.

Max. & Min. Measurement  
During the operation can memorize the maximum and the minimum measurement value.

### LCR GENERAL SPECIFICATIONS

Display	97 mm x 56 mm large LCD display.
Test frequency	100 Hz/120 Hz/1 KHz/10 KHz
Mode	L/C/R Function selector
L/C/R	Frequency selector D/Q/θ selector SER/PAL selector
Dissipation factor	0.000 to 9999
Quality factor	0.000 to 9999
θ measurement	± 90°
Calibration	Open/Short calibration
Datalogger	Auto 2 seconds to 3600 seconds
Sampling Time	Manual Push the data logger button once will save data one time.
Setting range	@ Set the sampling time to 0 second.
Data error no.	≤ 0.1% no. of total saved data typically.
SD card Capacity	4 GB to 32 GB
Power supply	1.5 V ( AA ) x 6 PCs, DC 9V adapter input *AC/DC Power adapter is optional.
Power consumption	Normal operation (w/o SD card save data) : Approx. DC 11 mA When SD card save the data : Will increase approx. DC 25 mA.
Standard Accessories Included	* Alligator clips.....1 PC * Operation manual.....1 PC
Optional Accessories	SMD test clip, SMDC-21

### LCR ELECTRICAL SPECIFICATIONS (23 ± 5 °C)

Resistance ( DCR )		
Range	Accuracy	Remark
60 Ω	± ( 1.5% + 5d )	After calibration
600 Ω	± ( 1.0% + 5d )	
6000Ω	± ( 1.0% + 5d )	
60 KΩ	± ( 1.0% + 5d )	
600 KΩ	± ( 1.0% + 5d )	
6000 kΩ	± ( 1.0% + 5d )	
20 MΩ	± ( 1.5% + 5d )	After calibration

### Resistance (Z) ( SER/PAL ) 0.5V(rms)

Range	Accuracy	Accuracy
	100 Hz/120 Hz	1k Hz
60 Ω	± ( 1.5% + 5d )	± ( 1.5% + 5d )
600 Ω	± ( 1.2% + 5d )	± ( 1.2% + 5d )
6000Ω	± ( 1.2% + 5d )	± ( 1.2% + 5d )
60 KΩ	± ( 1.2% + 5d )	± ( 1.2% + 5d )
600 KΩ	± ( 1.2% + 5d )	± ( 1.2% + 5d )
6000 kΩ	± ( 1.2% + 5d )	± ( 1.2% + 5d )
20 MΩ	± ( 2.0% + 5d )	± ( 2.0% + 5d )

Range	Accuracy	Remark
	10 kHz	
60 Ω	± ( 1.5% + 5d )	After calibration
600 Ω	± ( 1.2% + 5d )	
6000Ω	± ( 1.2% + 5d )	
60 KΩ	± ( 1.2% + 5d )	
600 KΩ	± ( 1.2% + 5d )	
6000 kΩ	± ( 1.2% + 5d )	
20 MΩ	± ( 3.0% + 5d )	After calibration

Remark :  
\* All specifications are under in battery operation.  
\* Don't apply voltage larger than 30 V to input terminals.

### Capacitance ( SER/PAL ) : D ≤ 0.1, 0.5V(rms)

Range	Accuracy	Accuracy
	100 Hz	120 Hz
600 pF	± ( 3.5% + 5d ) ± ( 3.5% + 5d )	± ( 3.5% + 5d )
6000 pF	± ( 2.5% + 5d ) ± ( 2.5% + 5d )	± ( 2.5% + 5d )
60 nF	± ( 2.0% + 5d ) ± ( 2.0% + 5d )	± ( 2.0% + 5d )
600 nF	± ( 2.0% + 5d ) ± ( 2.0% + 5d )	± ( 2.0% + 5d )
6000 nF	± ( 1.5% + 5d ) ± ( 1.5% + 5d )	± ( 1.5% + 5d )
60 uF	± ( 1.5% + 5d ) ± ( 1.5% + 5d )	± ( 1.5% + 5d )
600 uF	± ( 1.5% + 5d ) ± ( 1.5% + 5d )	± ( 1.5% + 5d )
6000 uF	± ( 2.5% + 5d ) ± ( 2.5% + 5d )	± ( 2.5% + 5d )
10 mF	± ( 3.5% + 5d ) ± ( 3.5% + 5d )	± ( 3.5% + 5d )

Range	Accuracy	Accuracy
	1k Hz	10 kHz
600 pF	± ( 2.5% + 5d ) ± ( 2.0% After calibration	± ( 2.0% After calibration
6000 pF	± ( 2.0% + 5d ) ± ( 1.5% After calibration	± ( 1.5% After calibration
60 nF	± ( 2.0% + 5d ) ± ( 1.5% + 5d )	± ( 1.5% + 5d )
600 nF	± ( 1.5% + 5d ) ± ( 1.5% + 5d )	± ( 1.5% + 5d )
6000 nF	± ( 1.5% + 5d ) ± ( 1.5% + 5d )	± ( 1.5% + 5d )
60 uF	± ( 1.5% + 5d ) ± ( 2.5% + 5d )	± ( 2.5% + 5d )
600 uF	± ( 2.5% + 5d )	-----
6000 uF	-----	-----
10 mF	-----	-----

Remark :  
\* All specifications are under in battery operation.  
\* Don't apply voltage larger than 30 V to input terminals.  
\* Discharge capacitor before measurement.  
\* If intend to obtain the accurate value of SMD capacitor, please test via optional. SMD test clip, SMDC-21.

### Inductance ( SER/PAL ) : D ≤ 0.1, 0.5V(rms)

Range	Accuracy	Accuracy Remark
	100 Hz	120 Hz
600 uH	-----	-----
6000 uH	-----	-----
60 mH	± ( 2.0% + 5d ) ± ( 2.0% + 5d )	± ( 2.0% + 5d )
600 mH	± ( 1.5% + 5d ) ± ( 1.5% + 5d )	± ( 1.5% + 5d )
6000 mH	± ( 1.5% + 5d ) ± ( 1.5% + 5d )	± ( 1.5% + 5d )
60 H	± ( 1.5% + 5d ) ± ( 1.5% After calibration	± ( 1.5% After calibration
200 H	± ( 2.5% + 5d ) ± ( 2.5% After calibration	± ( 2.5% After calibration

Range	Accuracy	Accuracy Remark
	1k Hz	10 kHz
600 uH	± ( 2.5% + 5d ) ± ( 2.5% After calibration	± ( 2.5% After calibration
6000 uH	± ( 2.0% + 5d ) ± ( 2.0% + 5d )	± ( 2.0% + 5d )
60 mH	± ( 1.5% + 5d ) ± ( 1.5% + 5d )	± ( 1.5% + 5d )
600 mH	± ( 1.5% + 5d ) ± ( 1.5% + 5d )	± ( 1.5% + 5d )
6000 mH	± ( 1.5% + 5d ) ± ( 1.5% + 5d )	± ( 1.5% + 5d )
60 H	± ( 2.5% + 5d )	-----After calibration
200 H	-----	-----

Remark :  
\* All specifications are under in battery operation.  
\* Don't apply voltage larger than 30 V to input terminals.  
\* Discharge capacitor before measurement.  
\* If intend to obtain the accurate value of SMD inductor, please test via optional. SMD test clip, SMDC-21.

### LCR SCALE RANGE CONFIGURATION

LCR mode			
Function mode	Frequency	Measuring range	Min. resolution
Inductance (SER/PAL)	100/120Hz	60.00 mH to 200.0 H	0.01 mH
	1kHz	600.0 uH to 60.00 H	0.1 uH
	10kHz	600.0 uH to 6000 mH	0.1 uH
Capacitance	100/120Hz	600.0 pF to 10.00 mF	1 pF
	1kHz	600.0 pF to 600.0 uF	0.1 pF
	10kHz	600.0 pF to 60.00 uF	0.1 pF
Resistance (SER/PAL)	100/120Hz	60.00 Ω to 20.00 MΩ	0.01 Ω
	1kHz	60.00 Ω to 20.00 MΩ	0.01 Ω
	10kHz	60.00 Ω to 20.00 MΩ	0.01 Ω