

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



LCR + MULTIMETER

Model : DM-9972SD

ISO-9001, CE, IEC1010

Tehran, Tehransar

FGJ-NDT.IR

DIGINDT.IR



+982165565901

+982144584619

+989034119385



Lutron

LUTRON ELECTRONIC

The Art of Measurement



Bench type, professional
SD card real time data recorder

LCR + MULTIMETER

Model : DM-9972SD **پترو فرهان گستر جنوب**

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DMM 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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- * 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).
- * 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. P = 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.

DMM GENERAL SPECIFICATIONS

Display Measurement	97 mm x 56 mm large LCD display DCV, ACV, DCA, ACA, Resistance, Diode, Continuity beeper, Frequency, Duty cycle.
Datalogger	Auto 2 seconds to 3600 seconds
Sampling Time Setting range	Manual Push the data logger button once will save data one time. @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	θ measurement
Power On/Off management	Auto power of or manual power off.
Memory recall	Records Maximum & Minimum readings with recall. To offset the measurement value.
Relative measurement	
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.

DMM 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	
	10 M ohm.
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	
	10 M ohm.
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) 6000 uA ± (0.5% + 2d) ± (1% + 7d) 60 mA ± (0.5% + 2d) ± (1% + 7d) 600 mA ± (0.5% + 2d) ± (1% + 7d) 6 A ± (1.5% + 5d) ± (1.5% + 5d) 10 A ± (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 Setting range	Manual Push the data logger button once will save data one time. @Set the sampling time to 0 second.
Data error no.	≤ 0.1% no. of total saved data typically.
SD card	4 GB to 32 GB
Capacity	
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	* Alligator clips.....1 PC * Operation manual.....1 PC
Included	
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)	
6000 Ω	± (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
	1k Hz	
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)
6000 pF	± (2.5% + 5d)	± (2.5% + 5d)
60 nF	± (2.0% + 5d)	± (2.0% + 5d)
600 nF	± (2.0% + 5d)	± (2.0% + 5d)
6000 nF	± (1.5% + 5d)	± (1.5% + 5d)
60 uF	± (1.5% + 5d)	± (1.5% + 5d)
600 uF	± (2.5% + 5d)	± (2.5% + 5d)
10 mF	± (3.5% + 5d)	± (3.5% + 5d)

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

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

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