

Bench type, professional
SD card real time data recorder

LCR + MULTIMETER

Model : DM-9972SD

ISO-9001, CE, IEC1010

www.yalab.com.tw

02-2389-0101



Lutron

www.YaLAB.com.tw

The Art of Measurement

Bench type, professional SD card real time data recorder

LCR + MULTIMETER

Model : DM-9972SD

www.YaLAB.com.tw 02-2389-0101

DMM FEATURE

* Real time Datalogger, save the into the SD memory card and can be downloaded to the Excel, extra software is no need.
* Built-in Clock (year/month/date/ hour/minute/second), sampling time set from 2 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 backligh, easy reading.
* 6000 counts A/D, high resolution.
* Accepts SD memory cards of up to 32 GB capacity.
* Multi function 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 FEATURE

* Real time Datalogger, save the into the SD memory card and can be downloaded to the Excel, extra software is no need.
* Built-in Clock (year/month/date/ hour/minute/second), sampling time set from 2 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. 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.

DMM GENERAL SPECIFICATION

Display	97 mm x 56 mm large LCD display	
Measurement	DCV, ACV, DCA, ACA, Resistance,Diode, Continuity beeper, Frequency, Duty cycle.	
Datalogger Sampling Time Setting range	Auto	2 seconds to 3600 seconds
	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	To freeze the display reading on the LCD display.
Power 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	ACA/DCA current adapter, Tachometer adapter, Humidity adapter, Pressure adapter, Light adapter, EMF adapter,Light adapter, EMF adapter, AC to DC 9V Adaptre..... AP-9VA RS232 cable to D-Sub 9 connector..... UPCB-06 UPCB-06 RS232 cable to USB connector..... USB-11 SD card..... SD-4/8GB Data Acquisition software..... SW-U801-WIN SW-E802

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	$\pm (0.5 \% + 2d)$	$\pm (1 \% + 7d)$
	6000 uA	$\pm (0.5 \% + 2d)$	$\pm (1 \% + 7d)$
	60 mA	$\pm (0.5 \% + 2d)$	$\pm (1 \% + 7d)$
	600 mA	$\pm (0.5 \% + 2d)$	$\pm (1 \% + 7d)$
	6 A	$\pm (1.5 \% + 5d)$	$\pm (1.5 \% + 5d)$
	10 A	$\pm (1.5 \% + 2d)$	$\pm (1.5 \% + 2d)$
	* 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	$\pm (0.5\% + 2d)$

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 MH
Accuracy	$\pm (0.5\% + 2d)$
Sensitivity	Min. 1 V rms, Max. 5 V rms.

OHMS

Range	600 Ω /6 K Ω /60 K Ω /600 K Ω /6 M Ω /60 M Ω		
Resolution	0.1 Ω /0.001 K Ω /0.01 K Ω /0.1 K Ω /0.001 M Ω /0.01 M Ω		
Accuracy	600 ohm :	$\pm (1 \% + 2d)$	
	6K/60K/600K/6 M	$\pm (1.5 \% + 2d)$	
	60 M	$\pm (3 \% + 5d)$	
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 SPECIFICATION

Display	97 mm x 56 mm large LCD display.	
Test frequency	100 Hz/120 Hz/1 KHz/10 KHz	
Mode L/C/R	L/C/R Function selector Frequency selector D/Q/ θ selector SER/PAL selector	
Dissipation factor	0.000 to 9999	
Quality factor	0.000 to 9999	
θ measurement	$\pm 90^\circ$	
Calibration	Open/Short calibration	
Datalogger Sampling Time Setting range	Auto	2 seconds to 3600 seconds
	Manual	Push the data logger button once will save data one time. @ Set the sampling time to 0 second.
Data error no.	$\leq 0.1\%$ 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 100 Hz/120 Hz	Accuracy 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 10 kHz	Remark
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 100 Hz	Accuracy 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 μF	± (1.5% + 5d)	± (1.5% + 5d)
600 μF	± (1.5% + 5d)	± (1.5% + 5d)
6000 μF	± (2.5% + 5d)	± (2.5% + 5d)
10 mF	± (3.5% + 5d)	± (3.5% + 5d)

Range	Accuracy 1k Hz	Accuracy 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)	-----
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) : $D \leq 0.1, 0.5V(rms)$

Range	Accuracy 100 Hz	Accuracy Remark 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 1k Hz	Accuracy Remark 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 M Ω	0.01 Ω
--	------	------------------------------------	---------------

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

1609-dm9972SD

www.YaLAB.com.tw 02-2389-0101