

# DataSheet

## SDM3055/SDM3055A Digital Multimeter

### Product Overview

The SDM3055 is a 5 1/2 digit digital multimeter incorporating a dual-readout display and is especially well suited for the needs of high-precision, multifunction, and automatic measurement applications.



### Application fields

- Research Laboratory
- Development Laboratory
- Repair and maintenance
- Calibration Laboratory
- Automatic Production Test
- General bench-top use

### User-Friendly Design

- 4.3" TFT-LCD,480\*272 display
- Support double display, Chinese and English Menu
- Built-in front panel accessible help system
- File management (support for U-disk and local storage)

### Main Functions

#### Basic Measurement Functions

- DC Voltage: 200 mV ~ 1000 V
- DC Current: 200  $\mu$  A ~ 10 A
- AC Voltage: True-RMS, 200 mV ~ 750 V
- AC Current: True-RMS, 20 mA ~ 10 A
- 2/4-Wire Resistance: 200  $\Omega$  ~ 100 M  $\Omega$
- Capacitance: 2 nF ~ 10000  $\mu$  F
- Continuity Test: Range is fixed at 2 k  $\Omega$
- Diode Test: Range is fixed at 2.0 V
- Frequency Measurement: 20 Hz ~ 1 MHz
- Period Measurement: 1  $\mu$  s ~ 0.05 s
- Temperature: Support for TC and RTD sensor

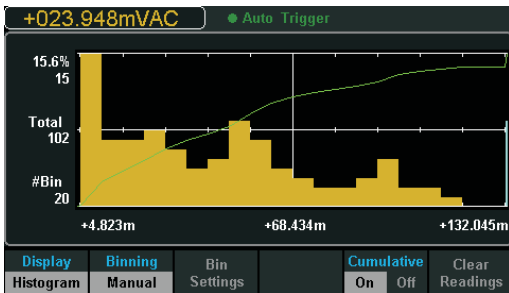
#### Math Function

Max, Min, Average, Standard Deviation, dBm/dB, Relative Measurement, Pass/Fail Histogram, Trending, Bar Chart

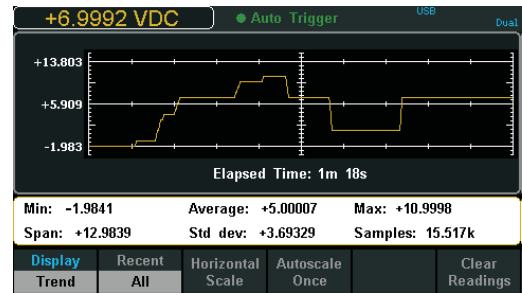
### Main Feature

- Real 5 1/2 digits readings resolution
- Up to 150 rdgs/s measurement speed
- True-RMS AC Voltage and AC Current measuring
- 1Gb Nand flash size, Mass storage configuration files and data files
- Built-in cold terminal compensation for thermocouple temperature measurements
- Standard interface: USB Device, USB Host, LAN, GPIB (only for SDM3055A)
- Support remote control via commands and compatible with commands of main stream multimeters
- Includes Siglent's EasySDM computer software

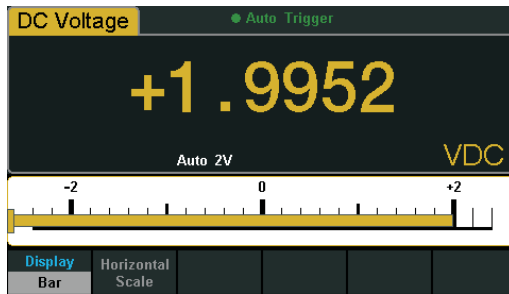
## Special Features



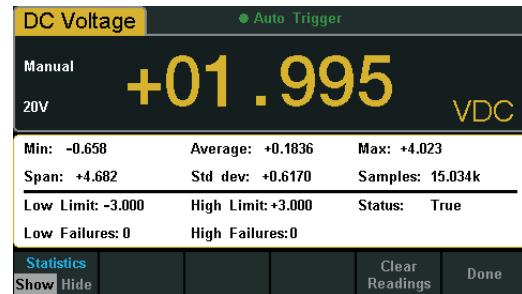
Histogram



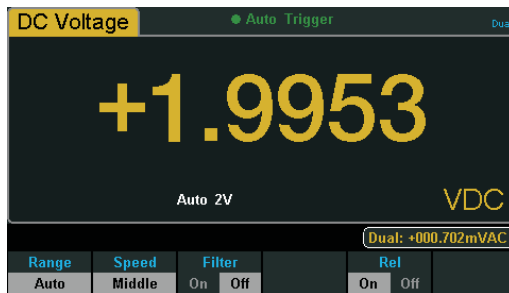
Trend Chart



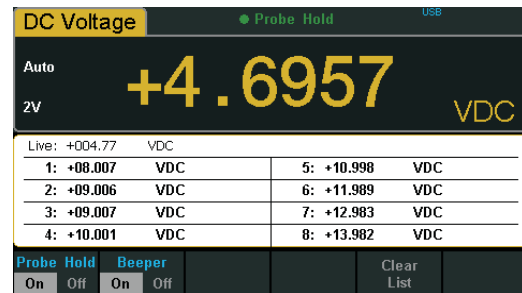
Bar Chart



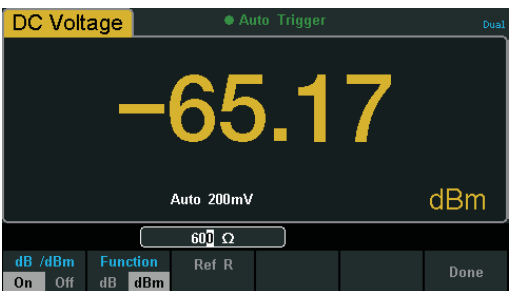
Statistics



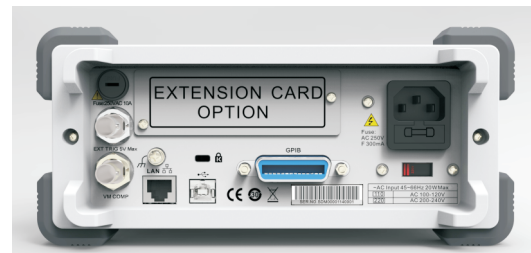
Double Display



Hold Measurement



dBm Measurement



Interface

## Specifications

### DC Characteristic

 Accuracy ± ( % of Reading + % of Range ) <sup>(1)</sup>

Function	Range <sup>[2]</sup>	Test current or Load voltage	1Year 23°C ± 5°C	Temperature coefficient 0°C~18°C 28°C~50°C
DC Voltage	200 mV		0.015+ 0.004	0.0015+ 0.0005
	2 V		0.015+ 0.003	0.0010+ 0.0005
	20 V		0.015+ 0.004	0.0020+ 0.0005
	200 V		0.015+ 0.003	0.0015+ 0.0005
	1000V <sup>[4]</sup>		0.015+ 0.003	0.0015+ 0.0005
DC Current	200 μA	< 8 mV	0.055+ 0.005	0.003+ 0.001
	2 mA	< 80 mV	0.055+ 0.005	0.002+ 0.001
	20 mA	< 0.05 V	0.095+ 0.020	0.008+ 0.001
	200 mA	< 0.5 V	0.070+ 0.008	0.005+ 0.001
	2 A	< 0.1 V	0.170+ 0.020	0.013+ 0.001
	10 A <sup>[5]</sup>	< 0.3 V	0.250+ 0.010	0.008+ 0.001
Resistance <sup>[3]</sup>	200 Ω	1 mA	0.030+ 0.005	0.0030+ 0.0006
	2 KΩ	1 mA	0.020+ 0.003	0.0030+ 0.0005
	20 KΩ	100 μA	0.020+ 0.003	0.0030+ 0.0005
	200 KΩ	10 μA	0.020+ 0.010	0.0030+ 0.0005
	2 MΩ	1 μA	0.040+ 0.004	0.0040+ 0.0005
	10 MΩ	200 nA	0.250+ 0.003	0.0100+ 0.0005
	100 MΩ	200 nA    10 MΩ	1.75+ 0.004	0.2000+ 0.0005
Diode Test	2.0 V <sup>[6]</sup>	1 mA	0.05+ 0.01	0.0050+ 0.0005
Continuity Test	2000 Ω	1 mA	0.05+ 0.01	0.0050+ 0.0005

**Remarks:**

[1] Specifications are for 0.5 Hour warm-up, "Slow" measurement rate and calibration temperature 18°C ~ 28°C.

[2] 20% over range on all ranges except for DCV 1000 V, ACV 750 V, DCI 10 A and ACI 10 A.

[3] Specifications are for 4-wire measure or 2-wire measure under "REF" operation. ± 0.2 Ω of extra errors will be generated if perform 2-wire measure without "REF" operation.

[4] Plus 0.02 mV of error per 1 V after the first ± 500 VDC.

[5] 30 seconds OFF after 30 seconds ON is recommend for the continuous current that higher than DC 7 A or AC RMS 7 A.

[6] Accuracy specifications are only for voltage measuring at input terminal. The typical value of current under measure is 1 mA. Voltage drop at diode junction may vary with current supply.

### AC Characteristic

 Accuracy ± ( % of Reading + % of Range ) <sup>(1)</sup>

Function	Range <sup>[2]</sup>	Frequency Range	1Year 23°C ± 5°C	Temperature coefficient 0°C~18°C 28°C~50°C
True-RMS AC Voltage <sup>[3]</sup>	200 mV	20 Hz ~ 45 Hz	1.5 + 0.10	0.01 + 0.005
		45 Hz ~ 20 KHz	0.2 + 0.05	0.01 + 0.005
		20 KHz ~ 50 KHz	1.0 + 0.05	0.01 + 0.005
		50 KHz ~ 100 KHz	3.0 + 0.05	0.05 + 0.010
	2 V	20 Hz ~ 45 Hz	1.5 + 0.10	0.01 + 0.005
		45 Hz ~ 20 KHz	0.2 + 0.05	0.01 + 0.005
		20 KHz ~ 50 KHz	1.0 + 0.05	0.01 + 0.005
		50 KHz ~ 100 KHz	3.0 + 0.05	0.05 + 0.010

**AC Characteristic**

 Accuracy ± ( % of Reading + % of Range ) <sup>[1]</sup>

Function	Range <sup>[2]</sup>	Frequency Range	1Year 23°C ± 5°C	Temperature coefficient 0°C~18°C 28°C~50°C
True-RMS AC Voltage <sup>[3]</sup>	20 V	20 Hz ~ 45 Hz	1.5 + 0.10	0.01 + 0.005
		45 Hz ~ 20 KHz	0.2 + 0.05	0.01 + 0.005
		20 KHz ~ 50 KHz	1.0 + 0.05	0.01 + 0.005
		50 KHz ~ 100 KHz	3.0 + 0.05	0.05 + 0.010
	200 V	20 Hz ~ 45 Hz	1.5 + 0.10	0.01 + 0.005
		45 Hz ~ 20 KHz	0.2 + 0.05	0.01 + 0.005
		20 KHz ~ 50 KHz	1.0 + 0.05	0.01 + 0.005
		50 KHz ~ 100 KHz	3.0 + 0.05	0.05 + 0.010
	750 V	20 Hz ~ 45 Hz	1.5 + 0.10	0.01 + 0.005
		45 Hz ~ 20 KHz	0.2 + 0.05	0.01 + 0.005
		20 KHz ~ 50 KHz	1.0 + 0.05	0.01 + 0.005
		50 KHz ~ 100 KHz	3.0 + 0.05	0.05 + 0.010
True-RMS AC Current <sup>[4]</sup>	20 mA	20 Hz ~ 45 Hz	1.5 + 0.10	0.015 + 0.015
		45 Hz ~ 2 KHz	0.5 + 0.10	0.015 + 0.006
		2 KHz ~ 10 KHz	2.50 + 0.20	0.015 + 0.006
	200 mA	20 Hz ~ 45 Hz	1.5 + 0.10	0.015 + 0.005
		45 Hz ~ 2 KHz	0.50 + 0.10	0.015 + 0.005
		2 KHz ~ 10 KHz	2.50 + 0.20	0.015 + 0.005
	2 A	20 Hz ~ 45 Hz	1.5 + 0.20	0.015 + 0.005
		45 Hz ~ 2 KHz	0.50 + 0.20	0.015 + 0.005
		2 KHz ~ 10 KHz	2.50 + 0.20	0.015 + 0.005
	10 A <sup>[5]</sup>	20 Hz ~ 45 Hz	1.5 + 0.15	0.015 + 0.005
		45 Hz ~ 2 KHz	0.50 + 0.15	0.015 + 0.005
		2 KHz ~ 10 KHz	2.50 + 0.20	0.015 + 0.005

 Additional wave crest factor error ( not Sine ) <sup>[6]</sup>

Wave crest coefficient	Error ( % Range )
1-2	0.05
2-3	0.2

**Remarks:**

[1] Specifications are for 0.5 Hour warm-up, "Slow" measurement rate and calibration temperature 18°C ~ 28°C.

[2] 20% over range on all ranges except for DCV 1000 V, ACV 750 V, DCI 10 A and ACI 10 A.

[3] Specifications are for amplitude of sine wave input &gt; 5% of range. For inputs from 1% to 5% of range and &lt; 50 kHz, add 0.1% of range extra error.

[4] Specifications are for sine wave input &gt; 5% of range. 0.1% errors will be added when the range of input sine wave is 1% to 5%.

[5] 30 seconds OFF after 30 seconds ON is recommend for the continuous current that higher than DC 7 A or AC RMS 7 A.

**Frequency and Period Characteristic**

 Accuracy ± ( % of Reading + % of Range ) <sup>[1]</sup>

Function	Range	Frequency Range	1Year 23°C ± 5°C	Temperature coefficient 0°C~18°C 28°C~50°C
Frequency /Period	200 mV ~750 V <sup>[2]</sup>	20 Hz ~ 2 KHz	0.01+0.003	0.002+0.001
		2 KHz ~ 20 KHz	0.01+0.003	0.002+0.001
		20 KHz ~ 200 KHz	0.01+0.003	0.002+0.001
		200 KHz ~ 1 MHz	0.01+0.006	0.002+0.002

**Remarks:**

[1] Specifications are for 0.5 Hour warm-up.

[2] Except for special marks, the AC input voltage is 15% to 120% of range when &lt;100 kHz and 30% to 120% of range when &gt;100 kHz. 750 V range is limited to 750 Vrms.

**Capacitance Characteristic**

 Accuracy ± ( % of Reading + % of Range ) <sup>[1]</sup>

Function	Range <sup>[2]</sup>	Max Testing Current	1Year 23°C ± 5°C	Temperature coefficient 0°C~18°C 28°C~50°C
Capacitance	2 nF	10 μA	3+1.0	0.08+0.002
	20 nF	10 μA	1+0.5	0.02+0.001
	200 nF	100 μA	1+0.5	0.02+0.001
	2 μF	100 μA	1+0.5	0.02+0.001
	20 μF	1mA	1+0.5	0.02+0.001
	200 μF	1mA	1+0.5	0.02+0.001
	10000 μF	1mA	2+0.5	0.02+0.001

**Remarks:**

[1] Specifications are for 0.5 Hour warm-up and "REF" operation. Using of non-film capacitor may generate additional errors.

[2] Specifications are for from 1% to 120% on 2 nF range and ranges from 10% to 120% on other ranges.

**Temperature Characteristic**

 Accuracy ± ( % of Reading + % of Range ) <sup>[1]</sup>

Function	Probe Type	Probe Model	Working Temperature Range	1Year 23°C ± 5°C	Temperature coefficient 0°C~18°C 28°C~50°C
Temperature	RTD <sup>[2]</sup>	α=0.00385	-200°C ~ 660°C	0.16°C	0.08+0.002
	TC <sup>[3]</sup>	B	0°C ~ 1820°C	0.76 °C	0.14°C
		E	-270°C ~ 1000°C	0.5°C	0.02°C
		J	-210°C ~ 1200°C	0.5°C	0.02°C
		K	-270°C ~ 1372°C	0.5°C	0.03°C
		N	-270°C ~ 1300°C	0.5°C	0.04°C
		R	-270°C ~ 1768°C	0.5°C	0.09°C
		S	-270°C ~ 1768°C	0.6°C	0.11°C
		T	-270°C ~ 400°C	0.5°C	0.03°C

**Remarks:**

[1] Specifications are for 0.5 Hour warm-up, not include probe error.

[2] Specifications are for 4-wire measure or 2-wire measure under "REF" operation.

[3] Built-in cold terminal compensation for thermocouple, accuracy is ± 1°C.

## Measuring Method and other Characteristics

<b>DC Voltage</b>	
Input Resistance	200 mV and 2 V Range 10 M $\Omega$ or 10 G $\Omega$ selectable
	20 V, 200 V and 1000 V Range 10 M $\Omega$ $\pm$ 2%
Input Bias Current	<90 pA, 25 $^{\circ}$ C
Input Protection	1000 V on all ranges
CMRR	120 dB ( For the 1 K $\Omega$ unbalanced resistance in LO lead, max $\pm$ 500 VDC )
NMRR	60 dB at "slow" measurement rate
	20 dB are added if open the "AC" filter.
<b>Resistance</b>	
Testing Method	4-wire resistance or 2-wire resistance selectable
Input Protection	1000 V on all ranges
<b>DC Current</b>	
Shunt Resistor	200 $\mu$ A sampling voltage < 8 mV
	2 mA sampling voltage < 80mV
	1 $\Omega$ for 20 mA, 200 mA
	0.01 $\Omega$ for 2 A, 10 A
Input Protection	Rear panel : accessible 10 A, 250 V fast-melt fuse
	Internal : 12 A, 250 V slow-melt fuse
<b>Continuity/Diode Test</b>	
Measurement Method	1 mA $\pm$ 5% constant-current source or open-circuit voltage
Beeper	yes
Continuity Threshold	Adjustable
Input Protection	1000 V
<b>True-RMS AC Voltage</b>	
Measurement Method	AC Coupled true RMS measure – up to 1000 V DC bias are permitted on every range.
Wave Crest Factor	$\leq$ 3 at full scale
Input Impedance	1 M $\Omega$ $\pm$ 2% in parallel with <100 pF on all ranges
AC Filter Bandwidth	20 Hz ~ 100 KHz
CMRR	60 dB ( For the 1 K $\Omega$ imbalance resistance among Lo lead and <60Hz, Max $\pm$ 500 VDC )
<b>True-RMS AC Current</b>	
Measurement Method	DC Coupled to the fuse and shunt; AC Coupled the True-RMS measurement (measures the AC components only)
Wave Crest Factor	$\leq$ 3 at full scale
Max Input	<10A (include DC component)
Shunt Resistor	1 $\Omega$ for 20 mA, 200 mA 1 $\Omega$ ; 0.01 $\Omega$ for 2 A, 10 A
Input Protection	Rear panel : accessible 10 A, 250 V fast-melt fuse
	Internal : 12 A, 250 V slow-melt fuse
<b>Frequency/Period</b>	
Measurement Method	Reciprocal-counting technique, AC Coupled input, AC voltage or AC current measurement function
Measure Attentions	Error are leaded into all frequency counters when measuring low voltage or low frequency signal.

<b>Capacitance Measuring</b>		
Measurement Method	Measure the rate of change of voltage generated during the current flowing the capacitance	
Connection Type	2-wire	
Input Protection	1000 V on all ranges	
<b>Temperature Measuring</b>		
Measurement Method	Support for TC and RTD types of sensor	
<b>Trigger and Memory</b>		
Samples/Trigger	1 ~ 10000	
Samples/Trigger	6ms ~ 10000ms optional	
External Trigger Input	Input Level	TTL compatible ( High level when left input terminal is hanging in the air )
	Trigger Condition	Rising and Falling selectable
	Input Impedance	≥20KΩ//400pF.DC-coupled
	Min Pulse	500 μ S
VMC Ouput	Level	TTL compatible
	Output Polarity	Straight and negative optional
	Output Impedance	200Ω, typical
<b>History Records</b>		
Volatile Memory	10K reading of history records	
Nonvolatile Memory	1Gb Nand Flash,Mass storage configuration files and data files, Support U-disk external storage	
<b>Math Functions</b>		
Min/Max/Average, dBm, dB, Pass/Fail, Relative, Standard deviation, Hold, histogram, Trend chart, Bar chart		
<b>General Specifications</b>		
<b>Power Supply</b>		
AC 100 V ~ 120 V	45 Hz ~66 Hz	
AC 200 V ~ 240 V	45 Hz~66 Hz	
Consumption	20VA max	
<b>Mechanism</b>		
Dimension	282mm × 260mm × 105mm	
Weight	3.33Kg	
<b>Other Characteristics</b>		
Display Screen	4.3" TFT-LCD with resolution 480*272	
Operation Environment	Full accuracy from 0°C~50°C,80%RH and 40°C,non condensing	
	Storage Temperature: -20°C ~ 70°C	
	Shock and Vibration: conforming to MIL-T-28800E, III类, 5 level ( only foe sine )	
	Height above sea level: up to 3000 meters	
Electromagnetic Compatibility	2004/1081EC Directive,Applicable standards EN61326-1:2013	
Safety	Conforming to IEC61010-1:2010. Measure CAT I 1000V/CAT 600V Class of pollution: 2	
Remote Interface	USB-GPIB(only for SDM3055A) , 10/100Mbit LAN, USB2.0 Full Speed Device&Host	
Programmer Language	Standard SCPI, compatible with commands of main stream multimeters	
Warm Up Time	30 minutes	

## Purchase Information

Product Name	SIGLENT SDM3055/SDM3055A Digital Multimeter	
Models	SDM3055	SDM3055A
Standard Accessories	A Power Cord that fits the standard of destination country	
	Two Test Leads,Two Alligator Clips	
	A USB Cable	
	A Quick Start	
	A Guaranty Card	
	A CD(including EasySDM computer software system)	

## Contact SIGLENT

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