ENGLISH

Product Datasheet

Stock No: 1236465

1236466

RS Pro DIGITAL MULTI-METER SDM3055 SERIES

Product Overview

RSDM3055 is a digital multimeter designed with 5 ½ digits readings resolution and dual-display, especially fitting to the needs of high-precision, multifunction and automatic measurement.

Application fields

- Research Laboratory
- Development Laboratory
- Detection and Maintenance
- Calibration Laboratory
- Automatic Production Test

User-Friendly Design

- 4.3” TFT-LCD,480*272
- Support double display, Chinese and English Menu
- Built-in help system makes information acquisition more easier
- File management (support for U-disc and local storage)

Main Function

Basic Measurement Function

- DC Voltage: 200 mV ~ 1000 V
- DC Current: 200 μA ~ 10 A
- AC Voltage: True-RMS, 200 mV ~ 750 V
- AC Current: True-RMS, 20 mA ~ 10 A
- 2/4-Wire Resistance: 200Ω ~ 100 MΩ
- Capacitance: 2 nF ~ 10000 μF
- Continuity Test: Range is fixed at 2 kΩ
- Diode Test: Range is fixed at 2.0 V
- Frequency Measurement: 20 Hz ~ 1 MHz
- Period Measurement: 1 μs ~ 0.05 s
- Temperature: Support for TC and RTD sensor

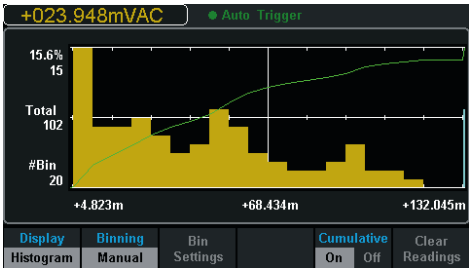
Math Function

- Max, Min, Average, Standard Deviation, dBm/dB, RelativeMeasurement,Pass/Fail Histogram, Trending, Bar Chart

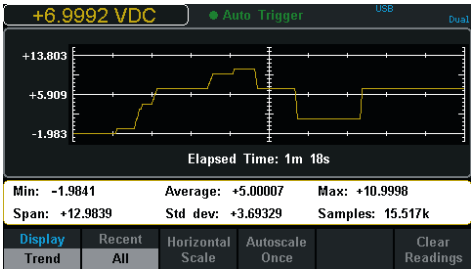
Main Feature

- Real 5½ 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
- With easy, convenient and flexible any sensor measurement control software: UltraSensor
- Standard interface: USB Device, USB Host, LAN, USB-GPIB adaptor (only for RSDM3055A)
- Support remote control via commands and compatible with commands of main stream multimeters

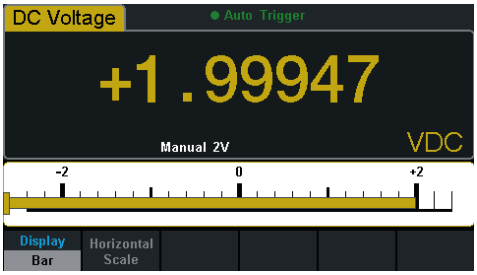
Special Features



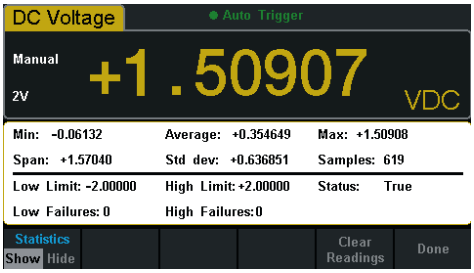
Historgram



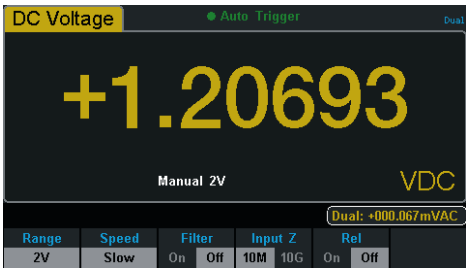
Trend Chart



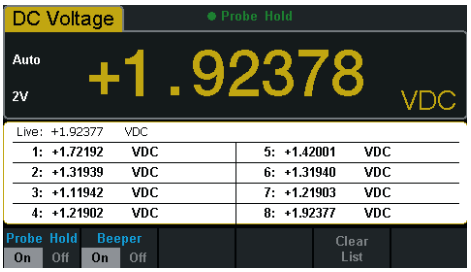
Bar Chart



Statistics



Double Display



Hold Measurement

Back Interface

Specifications

DC Characteristic

Accuracy±（% of Reading + % of Range）[1]

Function	Range[2]	Test current or Load voltage	1Year 23℃±5℃	Temperature coefficient 0℃～18℃ 28℃～50℃
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
	1000 V[4]		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[5]	< 0.3 V	0.250+ 0.010	0.008+ 0.001
Resistance[3]	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[6]	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℃～28℃.

[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. ±0.2Ω 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 foe 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）[1]

Function	Range[2]	Frequency Range	1Year 23℃±5℃	Temperature coefficient 0℃～18℃ 28℃～50℃
True-RMS AC Voltage [3]	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
	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 [4]	20 mA	20 Hz – 45 Hz	1.5 + 0.10	0.015 + 0.015
		45 Hz – 2 KHz	0.50 + 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[5]	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) [6]	
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℃～28℃.

[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 > 5% of range. For inputs from 1% to 5% of range and <50 kHz, add 0.1% of range extra error. For 50 kHz to 100 kHz, add 0.1% of range extra error.

[4] Specifications are for sine wave input > 5% of range. 0.1% errors wills be added when the range of input sine wave is 1% to 5% .

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

Frequency and Period Characteristic

Accuracy±（% of Reading + % of Range）[1]

Function	Range	Frequency Range	1 Year 23℃±5℃	Temperature coefficient 0℃～18℃ 28℃～50℃
Frequency /Period	200 mV 至 750 V[2]	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 <100 kHz and 30% to 120% of range when >100 kHz. 750 V range is limited to 750 Vrms.

Capacitance Characteristic

Accuracy±（% of Reading + % of Range）[1]

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

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

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℃.

Measuring Method and other Characteristics

DC Voltage		
Input Resistance	200 mV and 2 V Range 20 V, 200 V and 1000 V Range	10 MΩ or >10 GΩ selectable 10 MΩ ± 2%
Input Bias Current	<90 pA, 25°C	
Input Protection	1000 V on all ranges	
CMRR	120 dB（For the 1 KΩ unbalanced resistance in LO lead, max ±500 VDC）	
NMRR	60 dB at “slow” measurement rate 20 dB are added if open the “AC” filter.	
Resistance		
Testing Method	4-wire resistance or 2-wire resistance selectable	
Input Protection	1000 V on all ranges	
DC Current		
Shunt Resistor	200 μA sampling voltage < 8 mV 2 mA sampling voltage < 8 mV 1Ω for 20 mA, 200 mA 1Ω 0.01 Ω 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	
Continuity/Diode Test		
Measurement Method	1 mA ±5% constant-current source or open-circuit voltage	
Beeper	yes	
Continuity Threshold	Adjustable	
Input Protection	1000 V	
True-RMS AC Voltage		
Measurement Method	AC Coupled true RMS measure – up to 1000 V DC bias are permitted on every range.	
Wave Crest Factor	≤3 at full scale	
Input Impedance	1 MΩ ± 2% in parallel with <100 pF on all ranges	
AC Filter Bandwidth	20 Hz ～ 100 KHz	
CMRR	60 dB（For the 1 KΩ imbalance resistance among Lo lead and <60Hz, Max ±500 VDC）	
True-RMS AC Current		
Measurement Method	DC Coupled to the fuse and shunt; AC Coupled the True-RMS measurement (measures the AC components only)	
Wave Crest Factor	≤3 at full scale	
Max Input	<10A (include DC component)	
Shunt Resistor	1Ω for 20 mA, 200 mA 1Ω;　0.01 Ω 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	
Frequency/Period		
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 loe frequency signal.	

Capacitance Measuring		
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	
Temperature Measuring		
Measurement Method	Support for TC and RTD types of sensor	
Trigger and Memory		
Samples/Trigger	1～10000	
Trigger Delay	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 Impendance	≥20KΩ//400 pF ,DC-coupled
	Min Pulse	500 us
VMC output	Level	TTL compatible
	Output Polarity	Straight and negative optional
	Output Impendance	200Ω, typical
History Records		
Volatile Memory	10K reading of history records	
Nonvolatile Memory	1Gb Nand Flash, Mass storage configuration files and data files, Support U-disk external storage	
Math Functions		
Min/Max/Average, dBm, dB, Pass/Fail, Relative, Standard deviation, Hold, histogram, Trend chart, Bar chart		

General Specifications

Power Supply	
AC 100 V ～ 120 V	50/60 Hz
Consumption	20VA max
Mechanism	
Dimension	282mm×260mm×105mm
Weight	3.33Kg
Other Characteristics	
Display Screen	4.3” TFT-LCD with resolution 480*272
Operation Environment	Full accuracy from 0℃ to 50℃，80% RH and 40℃, non condensing
	Storage Temperature:’ -20℃-70℃
	Shock and Vibration: conforming to MIL-T-28800E, III , 5 level（only foe sine）
	Height above sea level: up to 3000 meters
Safety	Conforming to IEC61010-1:2001. Measure CAT I 1000V/CAT II 600V Class of pollution: 2
Remote Interface	USB-GPIB(only for RSDM3055A) ，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