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Product Datasheet - Technical Specifications

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Technical and commercial sales, price information, quotations, demo/test equipment, consulting:

Tel.: **+49 - (0)81 41 - 52 71-0**

E-Mail: **sales@meilhaus.com**

Meilhaus Electronic GmbH
Am Sonnenlicht 2
82239 Alling/Germany

Tel. **+49 - (0)81 41 - 52 71-0** E-Mail **sales@meilhaus.com**

www.meilhaus.com

SDM4065A
SDM4065A-SC
Digital Multimeter

Data Sheet
EN01A

SIGLENT TECHNOLOGIES CO.,LTD

SDM4065A
SDM4065A-SC

Product Overview

SDM4065A is a 6 ½ digits digital multimeter, with outstanding measurement accuracy and touchable screen, is a product designed for high-precision, multifunctional, and automatic measurement needs.

Main Functions

Basic Measurement Functions

- DC Voltage Measurement
- DC Current Measurement
- True-RMS AC Voltage Measurement
- True-RMS AC Current Measurement
- 2/4-Wire Resistance Measurement
- Capacitance Measurement
- Continuity Test
- Diode Test
- Frequency Measurement
- Period Measurement
- Temperature Measurement

Extended Function

Statistics, Limits, dB/dBm, Relative Measurement; Bar meter, Histogram, Trend Chart, Dual Display, Probe Hold and User-defined Sensor Measurement

Data Log Function

0.1 s~3600 s interval time can be set. Up to 2M points can be logged to Memory and 360M points can be logged to File. Up to 100 hours of logging time

Digitize Function

Sample rate up to 50 kSa/s, a maximum of 2M points can be acquired in a single acquisition, and the bandwidth is 10 kHz

Application fields

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

Main Features

- 5-inch true color TFT-LCD display with a resolution of 800 * 480, paired with a touchable screen and a brand-new UI
- Real 6½ digit (2,200,000 count) readings resolution
- Up to 50k rdgs/s of measurement speed, support a maximum sampling interval of 100 PLC and a minimum sampling interval of 0.001 PLC
- 512 MB RAM, capable of saving up to 2M readings for caching, support timestamp
- 256 MB Nand Flash, supports storage of various types of files such as readings, images, configuration files
- 4 trigger modes: auto trigger, single trigger, external trigger and level trigger
- 4 display modes: numerical, bar meter, trend chart and histogram
- DC measurements support autozero functions
- True-RMS AC Voltage and AC Current measurement
- Support automatic switching between 10 A high current and 3 A low current measurement modes, and can be tested up to 30 A when paired with an external shunt
- Support RTD, thermocouple and user-defined sensor
- Support dual display and probe hold functions
- Support standard SCPI remote control commands
- Equipped with EasyDMM-X host computer control and sampling software
- Communications interface: USB Device (optional USB-GPIB adapter), USB Host, LAN
- Support BNC VMC output, Trigger input
- Support VNC, Web-server
- Chinese and English menu, and built-in help system for easy information retrieval

Model and Key Specifications

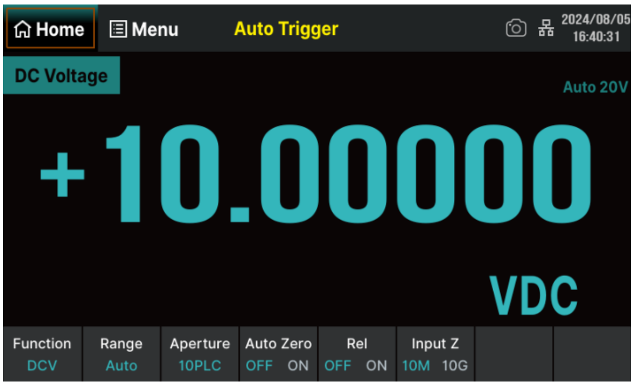
Model	SDM4065A	SDM4065A-SC [1]
Number of Digits	6½	
DCV Basic Accuracy	35 ppm	
Max Reading Rate	50,000 rdgs/s	
Logging Memory	Up to 2 million readings	
Support Scanner	No	Yes
DCV Range	200 mV ~ 1000 V	
ACV Range	200 mV ~ 750 V	
DCI Range	200 uA ~ 10 A	
ACI Range	200 uA ~ 10 A	
2/4-Wire Resistance Range	200 Ω~ 100 MΩ	
Continuity / Diode	Buzzer, 4 V	
Frequency / Period Range	3 Hz ~ 1 MHz	
Temperature	RTD, thermocouple	
Capacitance Range	2 nF ~ 100 mF	
IO	USB Host, USB Device, LAN, GPIB (optional)	
External Interface	Exit trigger, VMC output	
Display Screen	5-inch TFT touchable display screen	

Note:

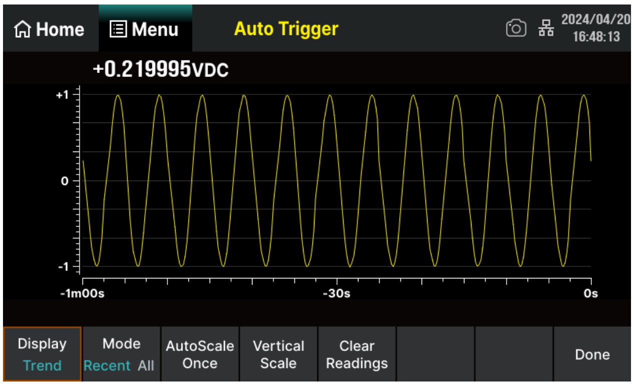
[1] For policy and regulatory reasons, this scanner model is not available in some regions, please contact the local distributor for more information.

Characteristics

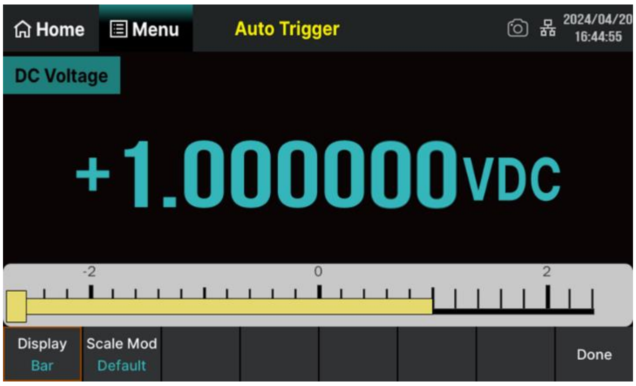
Numerical Display



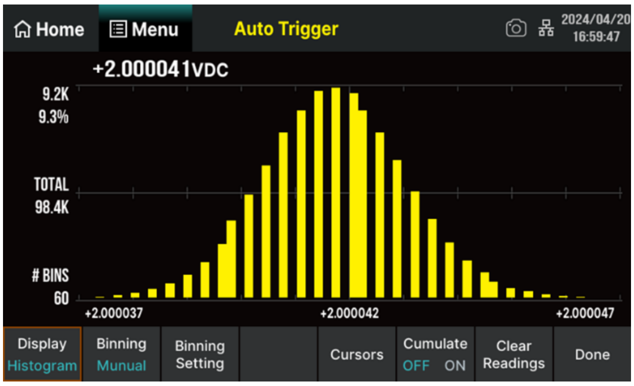
Trend Chart



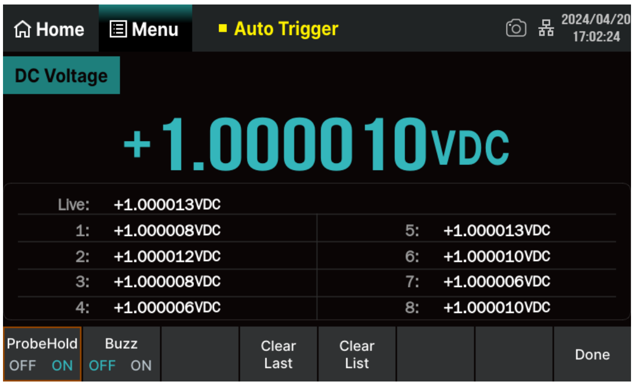
Bar Meter



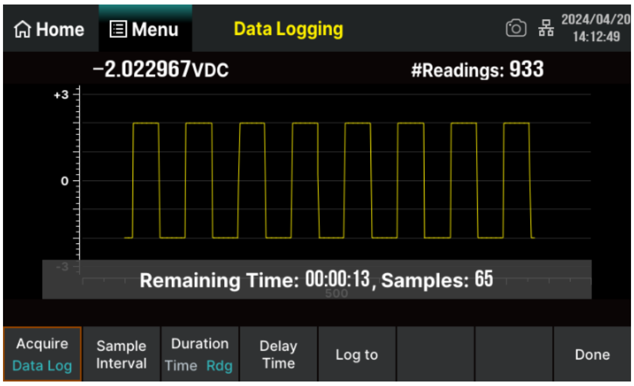
Histogram



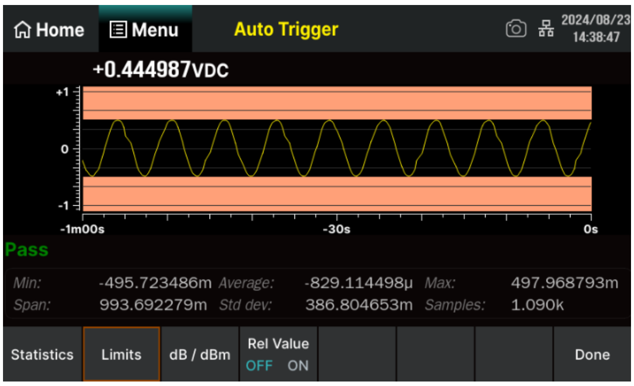
Probe Hold



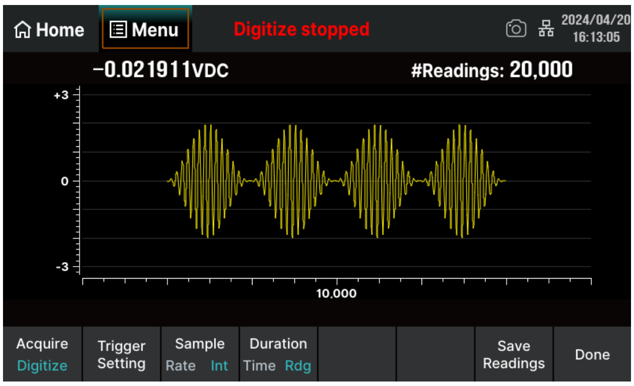
Data Log



Statistics and Limits



Digitize



Specifications

DC Characteristics

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

Function	Range [2]	Test Current or Load Voltage	24 Hours [3] TCAL ℃ ±1 ℃	90 Days TCAL ℃ ±5 ℃	1 Year TCAL ℃ ±5 ℃	Temperature Coefficient 0 ℃ ~ (TCAL ℃ -5 ℃) (TCAL℃ +5 ℃) ~ 50 ℃
DC Voltage	200.0000 mV		0.0020+0.0015	0.0030+0.0020	0.0040+0.0023	0.0005+0.0003
	2.000000 V		0.0015+0.0004	0.0020+0.0004	0.0035+0.0006	0.0005+0.0001
	20.00000 V		0.0020+0.0003	0.0030+0.0004	0.0040+0.0004	0.0005+0.0001
	200.0000 V		0.0020+0.0004	0.0040+0.0004	0.0050+0.0005	0.0005+0.0001
	1000.000 V [4]		0.0020+0.0005	0.0040+0.0008	0.0055+0.0008	0.0005+0.0001
DC Current	200.0000 μA	< 0.03 V	0.009+0.005	0.040+0.005	0.050+0.005	0.0020+0.0026
	2.000000 mA	< 0.25 V	0.007+0.001	0.030+0.002	0.050+0.002	0.0020+0.0001
	20.00000 mA	< 0.07 V	0.006+0.005	0.030+0.005	0.050+0.005	0.0020+0.0015
	200.0000 mA	< 0.7 V	0.009+0.001	0.030+0.001	0.050+0.002	0.0020+0.0001
	2.000000 A	< 0.12 V	0.045+0.005	0.080+0.005	0.100+0.012	0.0050+0.0008
	10.00000 A [5]	< 0.6 V	0.090+0.005	0.120+0.005	0.150+0.005	0.0050+0.0018
Resistance [6]	200.0000 Ω	1 mA	0.0030+0.0031	0.009+0.005	0.010+0.005	0.0006+0.0006
	2.000000 kΩ	1 mA	0.0020+0.0005	0.008+0.001	0.010+0.001	0.0006+0.0002
	20.00000 kΩ	100 μA	0.0020+0.0005	0.008+0.001	0.010+0.001	0.0015+0.0001
	200.0000 kΩ	10 μA	0.0020+0.0005	0.008+0.001	0.010+0.001	0.0015+0.0001
	1.000000 MΩ	2 μA	0.002+0.001	0.010+0.001	0.012+0.001	0.0030+0.0002
	10.00000 MΩ	200 nA	0.015+0.001	0.030+0.001	0.040+0.001	0.0030+0.0005
	100.0000 MΩ	200 nA ‖ 10 MΩ	0.300+0.010	0.800+0.010	0.800+0.010	0.1500+0.0002
Diode Test [7]	0 ~ 2 V	1 mA	0.002+0.009	0.008+0.020	0.010+0.020	0.0010+0.0020
	2 ~ 4 V	1 mA	0.002+0.010	0.008+0.020	0.010+0.020	0.0010+0.0020
Continuity Test	2000.0 Ω	1 mA	0.002+0.010	0.008+0.020	0.010+0.020	0.0010+0.0020

Notes:

[1] Specifications are for 90 minutes warm-up, and integration time 100 PLC. For integration time < 100 PLC, add the appropriate "RMS Noise Adder" listed in the following table.

[2] 10% over range on all ranges except for DCV 1000 V and DCI 10 A range.

[3] Relative to the calibration standards.

[4] For each additional volt over ± 500 V, add 0.03 mV error.

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

[6] Specifications are for 4-wire resistance measurement or 2-wire resistance measurement using "Ref" operation. Without "Ref" operation, add 0.2 Ω additional error in 2-wire resistance measurement.
[7] 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.

Performance Versus Integration Time

Integration time	Resolution [1]	NMRR [2]	Readings/s [3]		RMS Noise Adder [4] (% of Range)			
Number of Power Line Cycles [5] (NPLC)	(ppm Range)	(dB)	50 Hz	60 Hz	DCV 20 V	DCV 2 V, 1000 V Resistance 2 kΩ, 20 kΩ, 200 kΩ, 1 MΩ, 10 MΩ	DCV 200 V	DCV 200 mV Resistance 200 Ω DCI 2 mA, 200 mA, 10 A
0.001 (0.001)	2.7	0	50000	50000	0.0003	0.0008	0.0015	0.0050
0.01 (0.01)	1.6	0	5000	5000	0.0002	0.0005	0.0008	0.0025
0.1 (0.1)	1	0	500	500	0.0001	0.0003	0.0006	0.0025
1	0.22	60	50	60	0	0.0001	0.0002	0.0005
10	0.08	60	5	6	0	0	0	0.0002
100	0.08	60	0.5	0.6	0	0	0	0

Notes:
[1] Typical value. Resolution is defined as the typical 20 V range RMS noise.
[2] Normal mode rejection ratio for power-line frequency ± 0.1%. For power-line frequency ± 1%, subtract 20 dB. For ± 3%, subtract 30 dB.
[3] Maximum rate for DCV, DCI, 2-wire resistance and 4-wire resistance functions.
[4] The basic DC accuracy specifications include RMS noise at 100 PLC. For < 100 PLC, add "RMS Noise Adder" to the basic DC accuracy specifications.
[5] The PLC parameters in parentheses represent the integration time at 50 Hz power frequency in the power grid.

AC Characteristics

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

Function	Range [2]	Frequency Range	24 Hours [3] TCAL ℃ ±1 ℃	90 Days TCAL ℃ ±5 ℃	1 Year TCAL ℃ ± 5 ℃	Temperature Coefficient 0 ℃ ~ (TCAL ℃-5 ℃) (TCAL ℃ +5 ℃) ~ 50 ℃
True-RMS AC Voltage [4]	200 mV	3 Hz ~ 5 Hz	1.00+0.03	1.00+0.04	1.00+0.04	0.100+0.004
		5 Hz ~ 10 Hz	0.35+0.03	0.35+0.04	0.35+0.04	0.035+0.005
		10 Hz ~ 20 kHz	0.04+0.03	0.05+0.04	0.06+0.04	0.005+0.004
		20 kHz ~ 50 kHz	0.10+0.05	0.11+0.05	0.12+0.05	0.011+0.005
		50 kHz ~ 100 kHz	0.55+0.08	0.60+0.08	0.60+0.08	0.060+0.008
		100 kHz ~ 300 kHz	4.00+0.50	4.00+0.50	4.00+0.50	0.20+0.02
	2 V	3 Hz ~ 5 Hz	1.00+0.02	1.00+0.03	1.00+0.03	0.100+0.003
		5 Hz ~ 10Hz	0.35+0.02	0.35+0.03	0.35+0.03	0.035+0.003
		10 Hz ~ 20 kHz	0.04+0.02	0.05+0.03	0.06+0.03	0.005+0.003
		20 kHz ~ 50 kHz	0.10+0.04	0.11+0.05	0.12+0.05	0.011+0.005
		50 kHz ~ 100 kHz	0.55+0.08	0.60+0.08	0.60+0.08	0.060+0.008
		100 kHz ~ 300 kHz	4.00+0.50	4.00+0.50	4.00+0.50	0.20+0.02
	20 V	3 Hz ~ 5 Hz	1.00+0.03	1.00+0.04	1.00+0.04	0.100+0.004
		5 Hz ~ 10 Hz	0.35+0.03	0.35+0.04	0.35+0.04	0.035+0.004
		10 Hz ~ 20 kHz	0.04+0.04	0.07+0.04	0.08+0.04	0.008+0.004
		20 kHz ~ 50 kHz	0.10+0.05	0.12+0.05	0.15+0.05	0.012+0.005
		50 kHz ~ 100 kHz	0.55+0.08	0.60+0.08	0.60+0.08	0.060+0.008
		100 kHz ~ 300 kHz	4.00+0.50	4.00+0.50	4.00+0.50	0.20+0.02
	200 V	3 Hz ~ 5 Hz	1.00+0.03	1.00+0.04	1.00+0.04	0.100+0.004
		5 Hz ~ 10 Hz	0.35+0.03	0.35+0.04	0.35+0.04	0.035+0.004
		10 Hz ~ 20 kHz	0.04+0.04	0.07+0.04	0.08+0.04	0.008+0.004
		20 kHz ~ 50 kHz	0.10+0.05	0.12+0.05	0.15+0.05	0.012+0.005
		50 kHz ~ 100 kHz	0.55+0.08	0.60+0.08	0.60+0.08	0.060+0.008
		100 kHz ~ 300 kHz	4.00+0.50	4.00+0.50	4.00+0.50	0.20+0.02
	750 V [5]	3 Hz ~ 5 Hz	1.00+0.02	1.00+0.03	1.00+0.03	0.100+0.003
		5 Hz ~ 10 Hz	0.35+0.02	0.35+0.03	0.35+0.03	0.035+0.003
		10 Hz ~ 20 kHz	0.04+0.02	0.07+0.03	0.08+0.03	0.008+0.003
		20 kHz ~ 50 kHz	0.10+0.04	0.12+0.05	0.15+0.05	0.012+0.005
		50 kHz ~ 100 kHz	0.55+0.08	0.60+0.08	0.60+0.08	0.060+0.008
		100 kHz ~ 300 kHz	4.00+0.50	4.00+0.50	4.00+0.50	0.20+0.02

True-RMS AC Current [6]	200 uA	3 Hz ~ 5 Hz	1.10+0.06	1.10+0.06	1.10+0.06	0.200+0.005
		5 Hz ~ 10 Hz	0.35+0.06	0.35+0.06	0.35+0.06	0.100+0.005
		10 Hz ~ 5 kHz	0.15+0.06	0.15+0.06	0.15+0.06	0.015+0.005
		5 kHz ~ 10 kHz	0.35+0.70	0.35+0.70	0.35+0.70	0.030+0.005
	2 mA	3 Hz ~ 5 Hz	1.00+0.04	1.00+0.04	1.00+0.04	0.100+0.005
		5 Hz ~ 10 Hz	0.30+0.04	0.30+0.04	0.30+0.04	0.035+0.005
		10 Hz ~ 5 kHz	0.12+0.04	0.12+0.04	0.12+0.04	0.015+0.005
		5 kHz ~ 10 kHz	0.20+0.25	0.20+0.25	0.20+0.25	0.030+0.005
	20 mA	3 Hz ~ 5 Hz	1.10+0.06	1.10+0.06	1.10+0.06	0.200+0.005
		5 Hz ~ 10 Hz	0.35+0.06	0.35+0.06	0.35+0.06	0.100+0.005
		10 Hz ~ 5 kHz	0.15+0.06	0.15+0.06	0.15+0.06	0.015+0.005
		5 kHz ~ 10 kHz	0.35+0.70	0.35+0.70	0.35+0.70	0.030+0.005
	200 mA	3 Hz ~ 5 Hz	1.00+0.04	1.00+0.04	1.00+0.04	0.100+0.006
		5 Hz ~ 10 Hz	0.30+0.04	0.30+0.04	0.30+0.04	0.035+0.006
		10 Hz ~ 5 kHz	0.10+0.04	0.10+0.04	0.10+0.04	0.015+0.006
		5 kHz ~ 10 kHz	0.20+0.25	0.20+0.25	0.20+0.25	0.030+0.006
	2 A	3 Hz ~ 5 Hz	1.10+0.06	1.10+0.06	1.10+0.06	0.100+0.006
		5 Hz ~ 10 Hz	0.35+0.06	0.35+0.06	0.35+0.06	0.035+0.006
		10 Hz ~ 5 kHz	0.15+0.06	0.15+0.06	0.15+0.06	0.015+0.006
		5 kHz ~ 10 kHz	0.35+0.70	0.35+0.70	0.35+0.70	0.030+0.006
	10 A [7]	3 Hz ~ 5 Hz	1.10+0.08	1.10+0.10	1.10+0.10	0.100+0.008
		5 Hz ~ 10 Hz	0.35+0.08	0.35+0.10	0.35+0.10	0.035+0.008
		10 Hz ~ 5 kHz	0.15+0.08	0.15+0.10	0.15+0.10	0.015+0.008

Additional Error in AC Measurement

Additional Low Frequency Errors (% of Reading)				Additional Crest Factor Errors (No-sinewave) [8]	
Frequency	AC Filter			Wave Crest Coefficient	Error (% Range)
	> 3 Hz	> 20 Hz	> 200 Hz		
10 Hz ~ 20 Hz	0	--	--	1-2	0.05
20 Hz ~ 40 Hz	0	0.8	--	2-3	0.2
40 Hz ~ 100 Hz	0	0.3	--	3-4	0.4
100 Hz ~ 200 Hz	0	0.2	--	4-5	0.5
200 Hz ~ 1 kHz	0	0.15	0.3		
> 1 kHz	0	0	0.1		

Notes:

[1] Specifications are for 90 minutes warm-up, filter set to > 3 Hz and sinewave input.

[2] 10% over range on all ranges except for ACV 750 V and ACI 10 A range.

[3] Relative to calibration standards.

[4] 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 additional error. For 50 kHz to 100 kHz, add 0.13% of range additional error.

[5] ACV750 range limited to 8 x10^7 Volts·Hz. For input over 300 Vrms, add 0.7mV error for each additional volt.

[6] Specifications are for amplitude of sine wave input > 5% of range. For inputs within 1% to 5% of range, add 0.1% of range additional error. Specifications are typical values for 200uA, 2mA, 2A and 10A ranges when frequency > 1kHz.

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

[8] For frequency below 100 Hz, the specifications of slow filter are only for sinewave input.

Frequency and Period Characteristics

Accuracy ± (% of Reading) [1] [2]

Function	Range	Frequency Range	24 Hours [3] TCAL℃±1℃	90 Days TCAL℃±5℃	1 Year TCAL℃±5℃	Temperature Coefficient 0℃ ~ (TCAL℃-5℃) (TCAL℃+5℃) ~ 50℃
Frequency, Period	200 mV to 750 V	3 Hz ~ 5 Hz	0.07	0.07	0.07	0.005
		5 Hz ~ 10 Hz	0.04	0.04	0.04	0.005
		10 Hz ~ 40 Hz	0.02	0.02	0.02	0.001
		40 Hz ~ 300 kHz	0.005	0.006	0.007	0.001
		300 kHz ~ 1 MHz	0.005	0.006	0.007	0.001

Additional Low Frequency Errors (% of Reading)

Frequency	Gate Time (Resolution)			
	1 s (0.1 ppm)	0.1 s (1 ppm)	0.01s (10 ppm)	0.001 s (100 ppm)
3 Hz ~ 5 Hz	0	0.12	0.12	0.12
5 Hz ~ 10 Hz	0	0.17	0.17	0.17
10 Hz ~ 40 Hz	0	0.20	0.20	0.20
40 Hz ~ 100 Hz	0	0.06	0.21	0.21
100 Hz ~ 300 Hz	0	0.03	0.21	0.21
300 Hz ~ 1 kHz	0	0.01	0.07	0.07
> 1 kHz	0	0	0.02	0.02

Notes:

[1] Specifications are for 90 minutes warm-up, using 1s gate time.

[2] For frequency ≤ 300 kHz, the specification is the 10% to 110% of range of the AC input voltage. For frequency > 300 kHz, the specification is the 20% to 110% of range of the AC input voltage. The maximum input is limited to 750 Vrms or 8 $\times 10^7$ Volts·Hz (whichever is less). The accuracy is 10 times of reading accuracy in table when the AC voltage is at 200 mV range.

[3] Relative to calibration standards.

Capacitance Characteristics

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

Function	Range [2]	Test Current	1 Year TCAL ℃ ±5 ℃	Temperature Coefficient 0 ℃ ~ (TCAL ℃ -5 ℃) (TCAL ℃ +5 ℃) ~ 50 ℃
Capacitance	2.0000 nF	10 μA	2+2.4	0.05+0.06
	20.000 nF	10 μA	1+0.1	0.05+0.01
	200.00 nF	100 μA	1+0.1	0.01+0.01
	2.0000 μF	100 μA	1+0.1	0.01+0.01
	20.000 μF	1 mA	1+0.1	0.01+0.01
	200.00 μF	1 mA	1+0.1	0.01+0.01
	2.0000 mF	1 mA	1+0.1	0.01+0.01
	20.000 mF	1 mA	1+0.2	0.01+0.01
	100.00 mF	1 mA	3+0.1	0.05+0.02

Notes:

[1] Specifications are for 90 minutes warm-up and "Ref" operation. Using of non-film capacitor may generate additional errors.

[2] Specifications are for from 1% to 110% on 2 nF range and from 10% to 110% on other ranges.

Temperature Characteristics

Accuracy ± (Reading) [1]

Function	Probe Type	Probe Model	Working Temperature Range [2]	1 Year TCAL ℃ ±5 ℃	Temperature Coefficient 0℃ ~ (TCAL ℃ -5 ℃) (TCAL ℃ +5 ℃) ~ 50 ℃
Temperature	RTD [3] (R0 is within 49 Ω~2.1 kΩ)	α = 0.00385	-200 ℃ ~ 660 ℃	0.16 ℃	0.01 ℃
	TC [4][5]	B	0 ℃ ~ 1820 ℃	0.76 ℃	0.14 ℃
		E	-150 ℃ ~ 100 0℃	0.5 ℃	0.02 ℃
		J	-150 ℃ ~ 1200 ℃	0.5 ℃	0.02 ℃

		K	-100 ℃ ~ 1372 ℃	0.5 ℃	0.03 ℃
		N	-100 ℃ ~ 1300 ℃	0.5 ℃	0.04 ℃
		R	300 ℃ ~ 1768 ℃	0.5 ℃	0.09 ℃
		S	400 ℃ ~ 1768 ℃	0.6 ℃	0.11 ℃
		T	-100 ℃ ~ 400 ℃	0.5 ℃	0.03 ℃

Notes:

[1] Specifications are for 90 minutes warm-up, not include probe error.

[2] The temperature measurement function can also be applied outside the optimum range, but the measurement accuracy has certain errors.

[3] Specifications are for 4-wire measure or 2-wire measure under “Ref” operation.

[4] Relative to cold junction temperature, accuracy is based on ITS-90. Built-in cold junction temperature refers to the temperature inside the banana jack and its accuracy is ± 3.5 ℃.

[5] During calibration and verification, "Ref Temp-Ext" is preferred for measurement.

Data Log

Function	Specification
Logging Source	AC/DC Voltage, AC/DC Current, Resistance, Capacitance, Frequency, Period, Temperature
Sample Interval	1 ms ~ 3600 s
Log Sample Capacity	Log to Memory: up to 2,000,000 points Log to File: up to 360,000,000 points
Duration	Up to 100 hours
Delay	Up to 100 hours

Digitize

Function	Specification
Source	DC Voltage, DC Current
Sample Rate	10 Hz ~ 50 kHz
Samples Capacity	Up to 2000,000 points
-3dB Bandwidth	10 kHz

SFDR & SINAD [1]

Function	Range	Spurious-Free Dynamic Range (SFDR)	Signal-to-Noise-and-Distortion (SINAD)
DCV	200 mV	70	60
	2 V	75	65

	20 V	75	68
	200 V	80	70
	1000 V	80	75
DCI	200 uA	75	60
	2 mA	74	69
	20 mA	75	62
	200 mA	75	70
	2 A	75	62
	10 A	70	65

Note:
[1] Typical value, -1 dBFS, 1 kHz single tone. 20 us aperture time and autozero off.

Measurement Rate

Multimeter Measurement Rate [1]

Function	Setting	Integration time	Readings/s 50 Hz (60 Hz)
DC Voltage DC Current 2-wire Resistance 4-wire Resistance	0.001 PLC	20 (20) us	50000 (50000)
	0.01 PLC	200 (200) us	5000 (5000)
	0.1 PLC	2 (2) ms	500 (500)
	1 PLC	20 (16.7) ms	50 (60)
	10 PLC	200 (167) ms	5 (6)
	100 PLC	2 (1.67) s	0.5 (0.6)
AC Voltage AC Current	3 Hz AC Filter		0.5
	20 Hz		2
	200 Hz		50
Frequency / Period [2]	1 s Gate Time		1
	0.1 s		10
	0.01 s		100
	0.001 s		500
Capacitance [3]	100 mF range		1

Notes:
[1] Auto trigger, zero trigger delay, auto zero off and auto range off.
[2] 20 V range, 1 kHz input.

Measuring Method and other Characteristics

DC Voltage	
Input Resistance	200 mV, 2 V and 20V ranges: 10 MΩ or > 10 GΩ selectable (For these ranges, input beyond ±26V are clamped through inner 408 kΩ resistor)
	200 V and 1000 V ranges: 10 MΩ ± 1%
Input Bias Current	50 pA, 25 ℃, typical
Input Protection	1000 V on all ranges
CMRR	140 dB. For the 1 KΩ unbalanced resistance in LO lead, max ± 500 VDC peak
Resistance	
Testing Method	2-wire resistance or 4-wire resistance selectable
	Current source reference to LO input
Open Circuit Voltage	Limited to < 10 V
Max. Lead Resistance (4-wire resistance)	10% of range per lead for 200 Ω, 2 kΩ ranges, 1 kΩ per lead on all other ranges
Input Protection	1000 V on all ranges
DC Current	
Shunt Resistor	100 Ω for 200 uA, 2 mA ranges
	1 Ω for 20 mA, 200 mA ranges
	0.01 Ω for 2 A, 10 A ranges
Input Protection	Internal: 10 A, 1000 V Time-Lag fuse
Continuity / Diode Test	
Measurement Method	Measure resistance or voltage using 1 mA ± 5% constant-current source
Response Time	300 samples/s
Buzzer	Yes
Continuity Threshold	Adjustable from 1 Ω ~ 2 kΩ
Diode Threshold	Adjustable from 0 V ~ 4 V
Input Protection	1000 V on all ranges
Settling Time Considerations	Reading settling times are affected by source impedance, cable dielectric characteristics and input signal changes. The default measurement delay is selected to give first reading right for most measurements
Measurement Considerations	Teflon or other high-impedance, low-dielectric absorption wire insulation is recommended for these measurements
True-RMS AC Voltage	
Measurement Method	AC-Coupled True-RMS measurement with up to 400 V DC of bias on any range
Wave Crest Factor	≤ 5 at full scale
Input Impedance	1 MΩ ± 2% in parallel with < 150 pF capacitance on all ranges

Input Protection	750 Vrms on all ranges
AC Filter Bandwidth	Slow: 3 Hz ~ 300 kHz
	Medium: 20 Hz ~ 300 kHz
	Fast: 200 Hz ~ 300 kHz
True-RMS AC Current	
Measurement Method	DC Coupled to the fuse and shunt; AC Coupled the True-RMS measurement (measure the AC components only)
Wave Crest Factor	≤ 3 at full scale
Max Input	< 10 Arms (RMS current including DC component)
Shunt Resistor	100 Ω for 200 uA, 2 mA
	1 Ω for 20 mA, 200 mA
	0.010 Ω for 2 A, 10 A
Input Protection	Internal: 10 A, 1000 V Time-Lag fuse
Settling Time Considerations	The default measurement delay is selected to give first reading right for most measurements. Make sure the RC circuit of input terminal has been fully settled (about 1s) before accurate measurement. Applying > 300 Vrms (or > 5 Arms) will cause self-heating in signal-conditioning components and these errors are included in the instrument specifications. Internal temperature changes due to self-heating may cause additional error on lower AC voltage ranges. The additional error will be lower than 0.02% of reading and will generally dissipate within a few minutes
Frequency / Period	
Measurement Method	Reciprocal-counting technique, AC-Coupled input using AC voltage measurement function
Input Impedance	1 MΩ ± 2% in parallel with < 150 pF capacitance on all ranges
Input Protection	750 Vrms on all ranges
Measurement Considerations	All frequency counters are susceptible to error when measuring low-voltage, low-frequency signals
	Shielding inputs from external noise pickup is critical for minimizing measurement errors
Settling Time Considerations	Errors will occur when attempting to measure the frequency or period of an input following a DC current change. Make sure the RC circuit of input terminal has been fully settled (about 1s) before accurate measurement
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
Measurement Considerations	Since small capacitance measurements are susceptible to the external noise, shielding inputs from external noise pickup is critical for minimizing measurement errors
Temperature Measuring	
Measurement Method	Support for TC and RTD types of sensors

Measurement Considerations	The built-in cold junction temperature tracks the temperature inside the banana jack. The change of the temperature in banana jack may cause additional error. When using the built-in cold junction compensation, connect the sensor terminal of the thermocouple to the banana jack and allow it warm up for more than 3 minutes to minimize the error
Trigger and Memory	
Samples / Trigger	Pre-trigger or Pos-trigger, Internal Trigger or External Trigger, Rising Edge Trigger or Falling Edge Trigger
Trigger Delay	0 ~ 1000 s optional
Single Trigger Samples	1 ~ 599999999
External Trigger Input	Input Level: 5 V TTL compatible (High level when left input terminal is hanging in the air)
	Trigger Condition: rising and falling selectable
	Input Impedance: ≥ 30 kΩ//500 pF
	Delay: < 50 μs
	Max Rate: 300/s
	Min Pulse: 2 μs
VMC Output	Level: 5 V TTL compatible
	Output Polarity: positive and negative optional
	Output Impendence: 100 Ω, typical
	Pulse Width: about 2 μs
Math Functions	
Min / Max / Average / Standard deviation, dBm, dB, Limits	

General Specifications

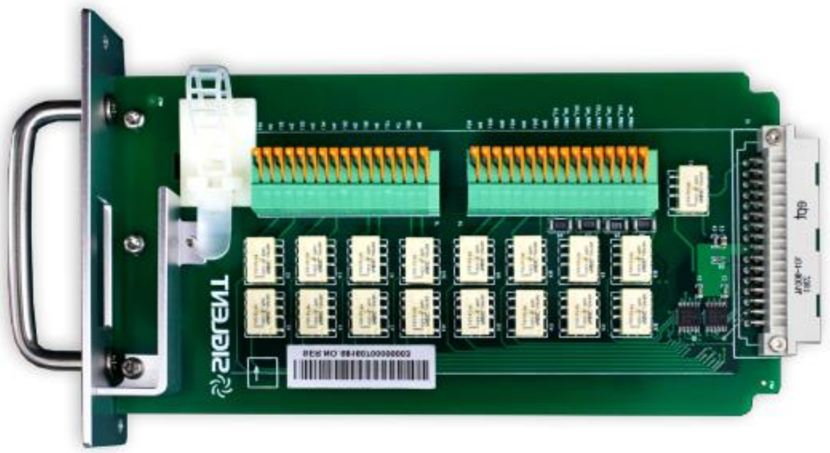
Power Supply	
AC 100 V ~ 120 V	45 Hz ~ 66 Hz
AC 200 V ~ 240 V	45 Hz ~ 66 Hz
Consumption	30 VA max
Mechanism	
Dimension (length * width * height)	379*260*103 mm
Weight	3.8 kg
Other Characteristics	
Display Screen	5-inch TFT display screen with resolution 800*480. Touchable screen
Operation Environment	Full accuracy for 0 ℃ to 50 ℃; Full accuracy to 40 ℃, 80% RH, non-condensing
	Storage temperature: -20 ℃ ~ 70 ℃
	Altitude: up to 2000 meters
Remote Interface	LAN, USB Device, USB Host, GPIB (optional)
Programmer Language	SCPI-compliant with the latest widely used multimeter command sets
Warm-up Time	90 minutes

Standard			
Electromagnetic Compatibility	Compliant with EMC directive (2014/30/EU), compliant with or superior to IEC 61326-1:2020/EN61326-1:2011 (basic requirements)		
	Conducted Emission	CISPR 11/EN 55011	CLASS A group 1, 150 kHz ~ 30 MHz
	Radiated Emission	CISPR 11/EN 55011	CLASS A group 1, 30 MHz ~ 1 GHz
	Electro-Static Discharge (ESD)	IEC 61000-4-2/EN 61000-4-2	4.0 kV (touch), 8.0 kV (air)
	RF Electromagnetic Field Immunity	IEC 61000-4-3/EN 61000-4-3	10 V/m (80 MHz to 1 GHz) 3 V/m (1.4 GHz to 2 GHz) 1 V/m (2.0 GHz to 2.7GHz)
	Electrical Fast Transient (EFT)	IEC 61000-4-4/EN 61000-4-4	2 kV (AC input port)
	Surge	IEC 61000-4-5/EN 61000-4-5	1 kV (Line to Line) 2 kV (Line to Earth)
	RF Continuous Conduction Immunity	IEC 61000-4-6/EN 61000-4-6	3 V, 0.15 ~ 80 MHz

	Voltage Dips and Short Interruptions	IEC 61000-4-11/EN 61000-4-11	Voltage Dips: 0% UT during 1 cycle 40% UT during 10/12 cycles 70% UT during 25/30 cycles Short Interruptions: 0% UT during 250/300 cycles
Safety	Compliant with the Low Voltage Directive (2006/95/EC) and standard EN61010-1:2010		

Scanner card SC1016

The scanner card SC1016 is a multiplexer that provides multi-point measurement capabilities to the SDM4065A-SC. The scanner features 12 multi-purposes + 4 current channels and supports the following measurement functions: DCV, ACV, DCI, ACI, 2WR, 4WR, CAP, FREQ, DIODE, CONT and TEMP (RTD and Thermocouple). It provides a convenient and versatile solution for test applications that require multiple measurement points or signals and is an ideal tool for R&D burn-in and production testing.



Specifications

To achieve the best performance from the product, please read this guide carefully.

Items [1][2]	Specifications
Max AC Voltage	125 rms or 175 V peak, 100 kHz, 0.3 A switched, 125 VA (resistive load)
Contact Life	> 100000 operations, at 1 A 30 VDC (at 0.5Hz) > 100000 operations, at 0.3 A 125 VDC (at 0.5Hz)
Contact Resistance	75 mΩ (maximum at 6 VDC, 1A)
Channel to Channel Switching Time	280 ms (typical)
Maximum Switching Voltage	250 VAC, 220 VDC
Maximum Switching Power	62.5 VA / 30W
Insulation Resistance	Minimum 1 GΩ
Connect Type	Clamp terminal, #24 AWG wire size

Notes:

[1] To avoid damage to the instrument, do not pull out the scanner card during instrument active, and wait until the instrument is powered off before performing the corresponding operation.

[2] Keep the front panel inputs floating when using the scanner card to avoid damage to the switch and electrical shock from the front panel inputs.

Channel Capabilities

Function	No. of wires	No. of channels
DCV / ACV [1]	2 wires (H, L)	12 (CH1 ~ CH12)
DCI / ACI [2]	2 wires (H, L)	4 (CH13 ~ CH16) (2A Range)
2 W Resistance	2 wires (H, L)	12 (CH1 ~ CH12)
4 W Resistance	4 wires (H, L, HS, LS)	6 (CH1 ~ CH6 for HI/LO) (CH7 ~ CH12 for HS/LS)
Capacitance	2 wires (H, L)	12 (CH1 ~ CH12)
Diode / Continuity	2 wires (H, L)	12 (CH1 ~ CH12)
Period / Frequency	2 wires (H, L)	12 (CH1 ~ CH12)
Temp (Thermocouple)	2 wires (H, L)	12 (CH1 ~ CH12)
Temp (RTD)	2 wires (H, L)	12 (CH1 ~ CH12)

Notes:

[1] Input signal is limited: < 125 VAC, 100 VDC

[2] Continuous current limited:< 2.2 A. Accuracy: ± (% 3 of reading + 0.02% of range).

Ordering Information

Product Model	Description
SDM4065A	6.5 digits high-precision multimeter
SDM4065A-SC	6.5 digits high-precision multimeter with 16 channel scanner cards

Standard Configurations	Quantity
Power Cord	1
Test Leads	2
Alligator Clips	2
USB Cable	1
Quick Start	1
Warranty Card	1
Upper Computer Software	Free download from official website

Optional Configurations	Model
USB-GPIB Adapter	USB-GPIB
30 A Diverter	SCD30A