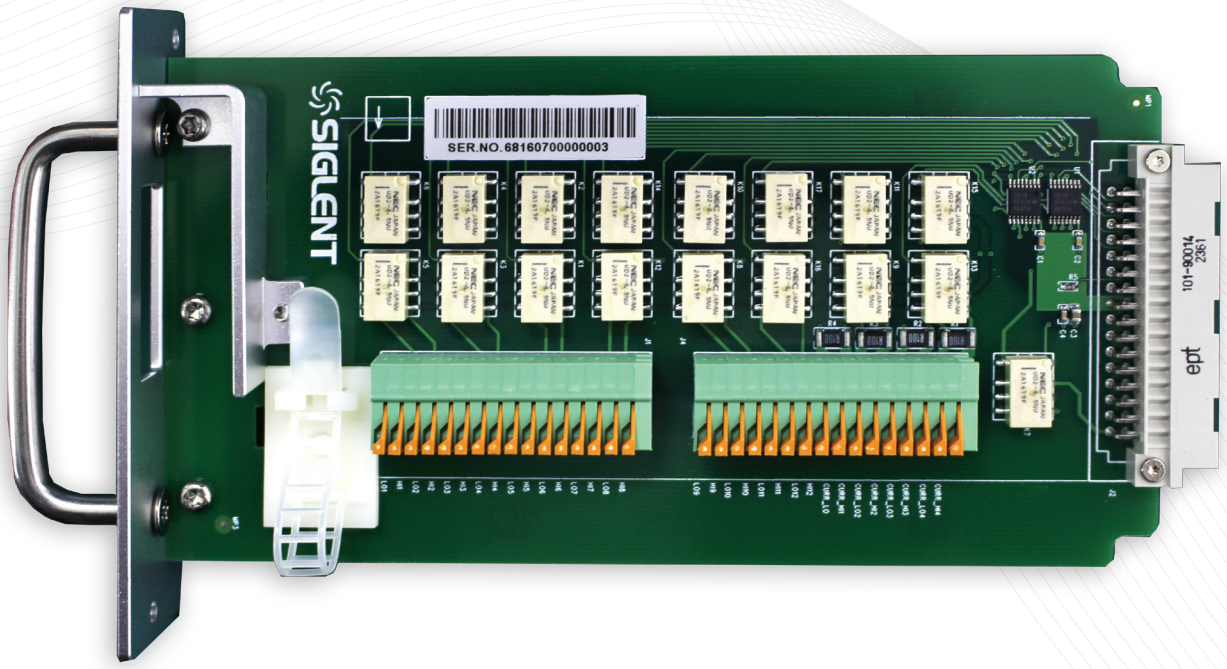
SC1016
User's Guide



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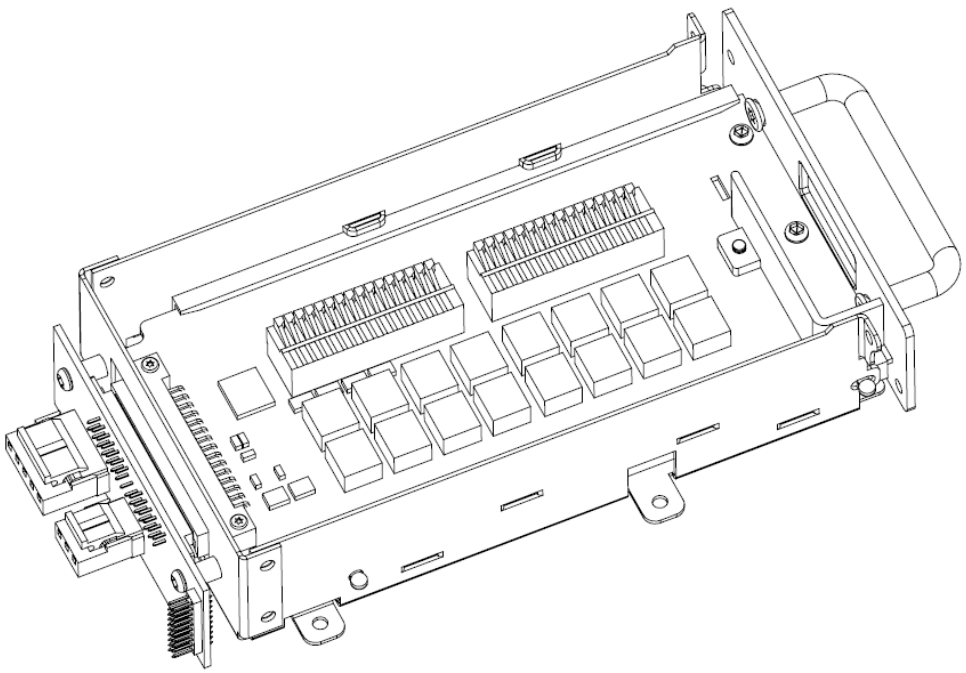
SIGLENT Digital Multimeter SC1016 User's Guide

Product Overview

The SIGLENT SC1016 is a multiplexer that provides multi-point measurement capabilities to the SDM3000 series of digital multimeters. The scanner features 12 multi-purpose + 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.



Safety

SIGLENT thanks you for purchasing the SC1016 module. To achieve the best performance from the product, please read this guide carefully. To avoid electrical shock and personal injury, please don't use the product to measure signals that exceed the published specification.

Specifications

Max AC Voltage	125V rms or 175V peak, 100kHz,
	0.3 A switched, 125VA (resistive load)
Maximum DC Voltage	110V, 1A switched, 30VDC (resistive load)
Contact Life	＞100000 operations，at 1A 30VDC(at 0.5 Hz)
	＞100000 operations，at 0.3A 125VDC (at 0.5 Hz)
Contact Resistance	75 mΩ （maximum at 6VDC, 1A）
Actuation Time	5ms maximum on/off
Maximum switching voltage	250 VAC, 220 VDC
Maximum switching power	62.5VA / 30W
Insulation Resistance	Minimum 1G ohm （500VDC）
Connector Type	Clamp terminal, #24 AWG wire size

Prenotion: To avoid breaking the product, please do not pull it away from multimeter when measurement is executed.

Channel Capabilities

Item	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)
2W Resistance	2 wires (H, L)	12 (CH1~CH12)
4W Resistance	4 wires (Input H, L + sense H, L)	6 pairs (CH1 [input] & CH7 [sense], 2&8, •••, 6&12)
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) Temp (RTD)	2 wires (H, L) 2 wires (H, L)	12 (CH1~ CH12) 12 (CH1~ CH12)

Remarks:

[1]Voltage range : <125VAC, 110VDC

[2] For continuous current < 2.2A, Accuracy ± (% 3 (reading) + 0.02% (range)).

Steps

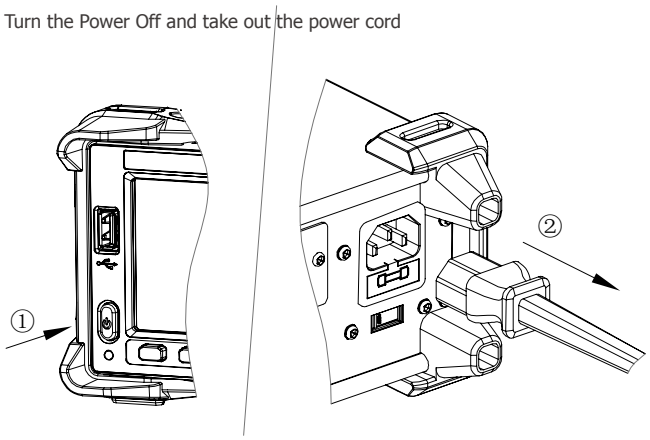
1.Operations

WARNING

The SC1016 is not designed to be "hot swappable". Remove power from all inputs and turn the instrument power off before installation or removal of the scanner card. Hot swapping the card could cause damage and is not covered under the warranty.

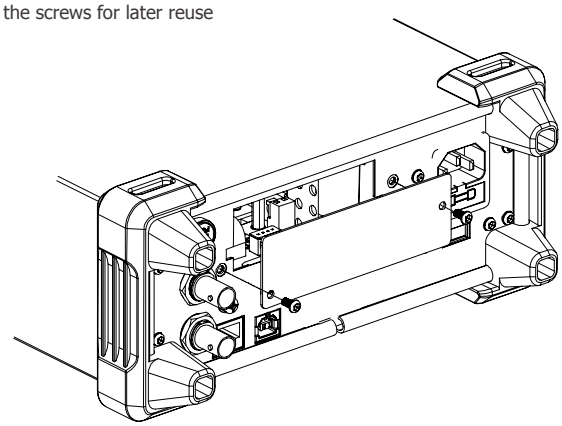
1.Power Off

Turn the Power Off and take out the power cord



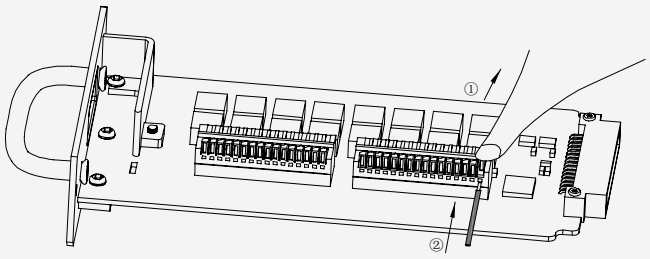
2.Open the SDM rear panel slot

Take off the two screws on the slot corners to remove the optional slot cover. Keep the screws for later reuse



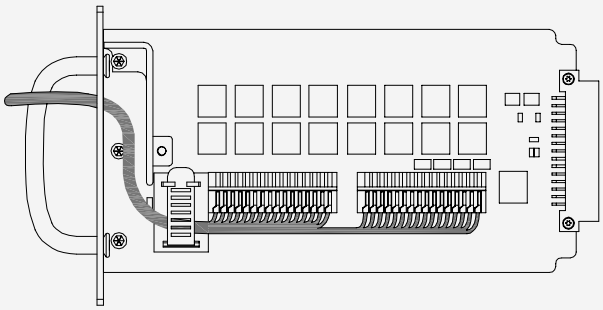
3.Connection

Turn the clamp and insert the wire.



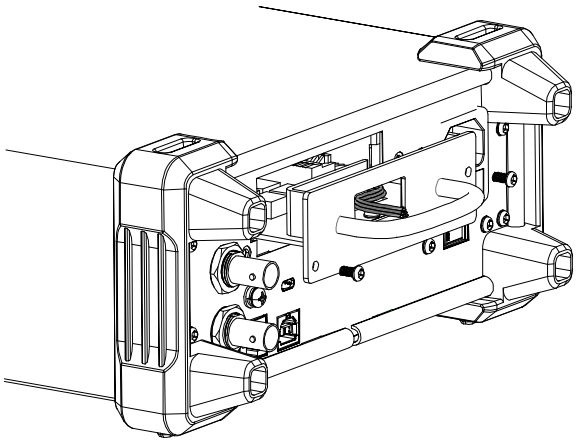
4. Tighten cable

Route wiring through strain relief and Cable tie rap Wrap



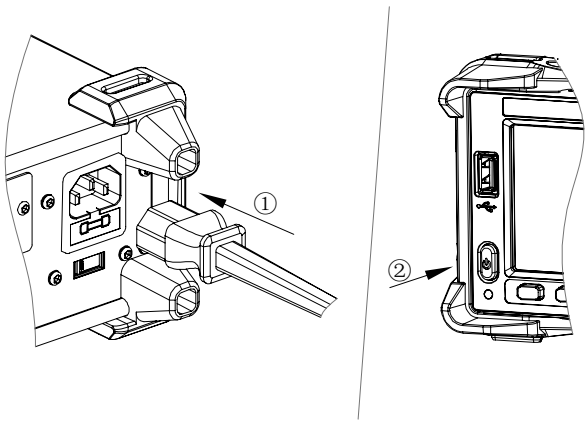
5.Insert the SC1016

Insert the SC1016 bottom-side-up. Close the cover by tightening the screws.



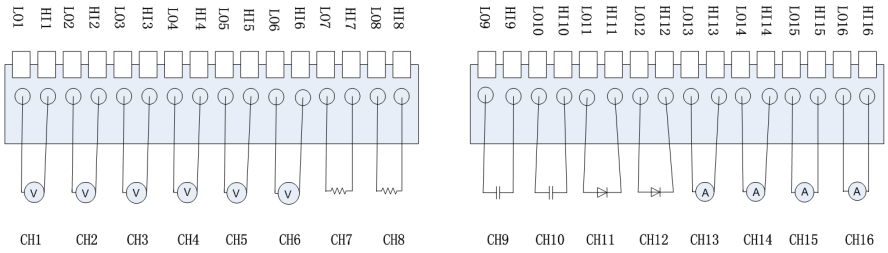
6.Power On

Connect the power cord and turn On the power



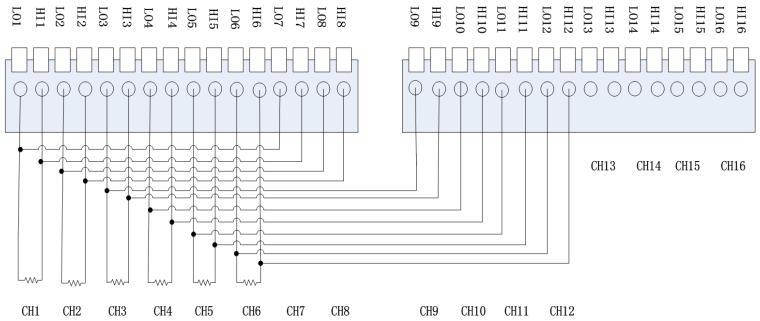
2.Application of 16 Channels

(1) 2-Wired Application [1](DCV/ DCI/ ACV/ ACI 2WR/ 4WR/ CAP/ FREQ/ DIODE/ CONT / TEMP)



Remarks: [1] CH1 to CH12 can be used to measure DCV /ACV/ 2WR/ 4WR/ CAP/ FREQ/ DIODE/ CONT / TEMP. CH13 to CH16 can only be used for current measurements, less-than 2.4A

(2) 4-Wire Resistance Applications[1]



Remarks: [1] To minimize voltage errors, the remote sense connections (CH7,CH8 etc..) should be made as close to the device-under-test (DUT) as possible.

3.Front Panel operations

Press Shift and Temp to enter the operating menu of Utility function, as the following diagram shows.

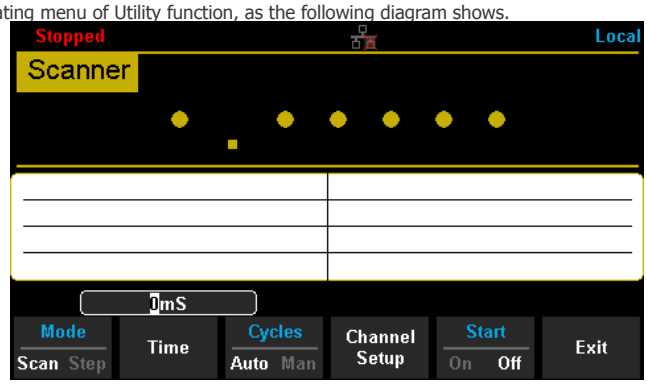


Table 1. Scanner Function Menu Description

Function Menu	Settings	Description
Mode	Scan/Step	Set the operation mode
Time	0ms~999.999s	Sets the duration between each scan loop (Scan mode) or between each scanned channel (Step mode)
Cycles	Auto/Man	Sets the number of scan operations
Channel Setup		Sets the scanned channel range, measurement function, and measurement parameters
Start	On/Off	Start or stop scan operation
Exit		Exit the scanner function

1.Operation mode setup

•Scan: Measures all specified channel ranges (Channel MIN~MAX) for each trigger event. Time settings are applied between each scan for the whole channel range.

•Step: Measures a single channel in the specified range (Channel MIN~MAX) at each trigger event. Time settings are applied for each channel.

2.Time setup

Use the direction keys to set the duration between each scan loop (Scan mode) or between each scanned channel (Step mode)

3.Cycles

•Auto: The instrument will scan specified channel circularly after the scan operation start and you should stop the operation manually.

•Manual: Sets the number of scan operations by direction keys. The range of the setting is from 1 to 999. After starting the scan operation the instrument will not stop scanning until reaches cycle number.

4.Channel setup

Press the [Channel Setup] to enter the setup interface.

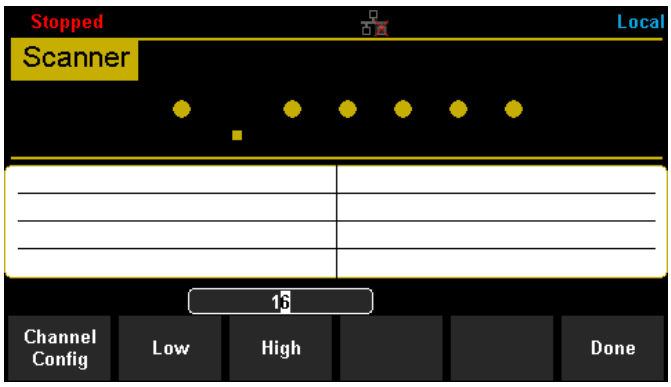
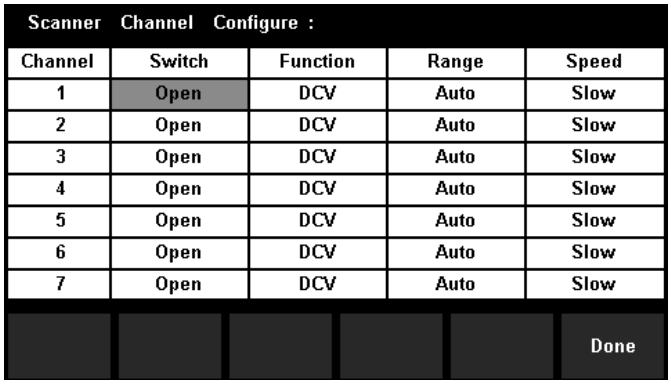


Table 2. Scanner Function Menu Description

Function Menu	Description
Channel Config	Open/close the channel and set the measurement function, measurement parameters of specified channel.
Low	Set the low value of scanned channel range.
High	Set the high value of scanned channel range.

Press the [Channel Setup] to enter the channel configuration interface and set the channel switch, function, range and speed..



The range setting is applicable for the following functions: DC/AC Voltage (DCV/ACV), 2/4 Wire Resistance (2W/4W), Capacitance (CAP), Frequency (FRQ).

Table 3. Available Range for different measurement function

Measurement Function	Available Range
DCV/ACV/ FRQ	Auto, 200mV, 2V, 20V, 200V
DCI/ACI	2A (fixed)
2W/4W	Auto, 200Ω, 2kΩ, 20kΩ, 200kΩ, 2MΩ(1MΩ for SDM3065X), 10MΩ, 100MΩ
CAP	Auto, 2nF, 20nF, 200nF, 2μF, 20μF, 200μF, 10000μF (2mF, 20mF, 100mF for SDM3065X)

The scanner function provides two measurement speeds: Fast (50 reading/s) and Slow (5 reading/s). (Fast: 1PLC, Slow: 10 PLC for SDM3065X)

The speed setting is applicable for the following functions: DC/AC Voltage (DCV/ACV), 2/4 Wire Resistance (2W/4W)

Operating instructions:

- Move the cursor to choose the wanted parameter by direction keys and the background color of cursor's position turns to gray.
- Select the current item by pressing "OK" key and the background color of the selected item turns to green.
- Set the parameter by up and down direction keys.
- Press "OK" key again to store the setting of the selected item of which the background turns back to gray. Move the cursor and repeat the prior steps to set the next parameter.
- Press [Done] to save the current settings and return to the higher level menu.

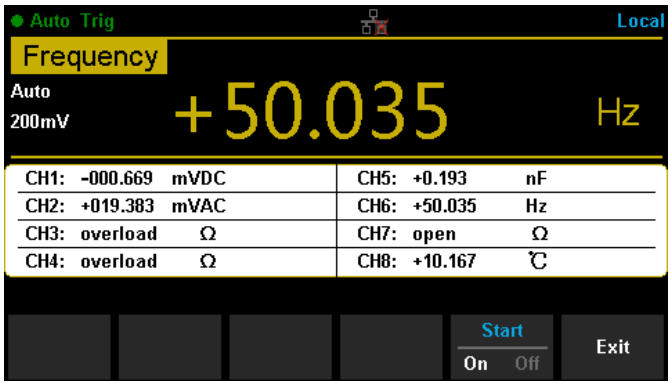
5.Channel range setting

Select [High] or [Low] and then input numerical value by direction keys.

Note: The upper limit value should be always bigger than the lower limit value.

6.Start scan operation

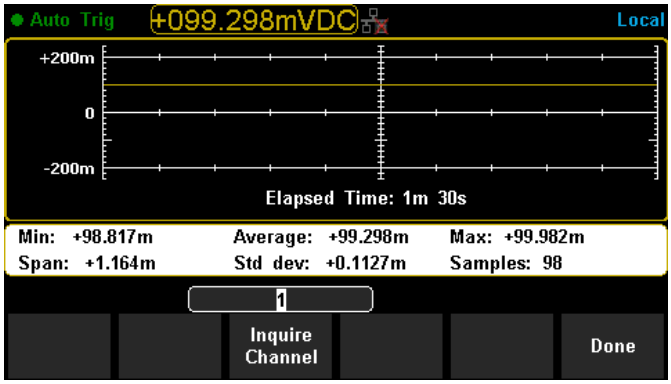
Set the [Start] to on to start the scan operation



The upper part of the interface displays the function, range, and result of the current channel. The table below records the measurement result of each channel.

7.Enter trend chart and statistics mode (optional operation)

Press Shift and Math to open trend chart and statistics function.



Set the [Inquire Channel] by direction keys and the interface displays the minimum, average, maximum, span, standard deviation, samples and trend chart of measurement results of the setting channel during the scan operation.

Press [Done] to return to higher level menu.

8.Stop scan operation

Set the [Start] to off to stop the scan operation.

If the [Cycles] is set to manual, then the instrument will stop scan when it reaches the cycle number

9.Store measurement data (optional operation)

Press Shift and Dual , then Select [Store/Recall] → [Store Settings] to enter the storage function interface.

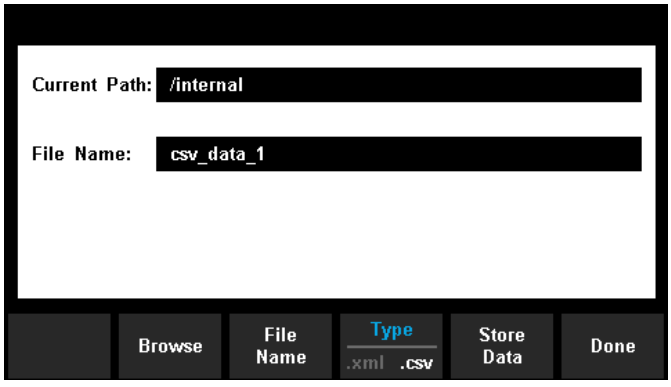


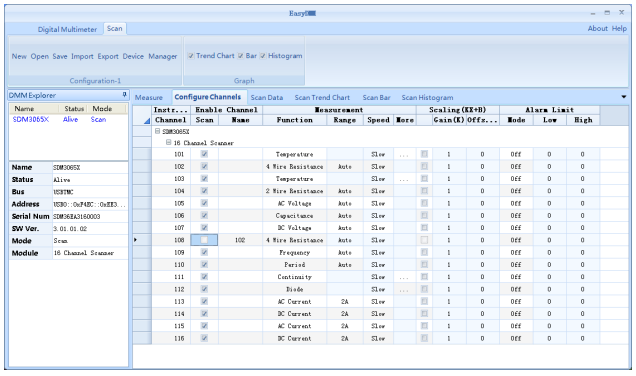
Table 4. Storage Function Menu Description

Function Menu	Settings	Description
Browse		Choose the location that file will be saved.
File Name		Input a file name.
Type	.xml / .csv	Choose the type that the file is saved. .xml: configuration of scan function .csv: measurement data
Store Data		Save the file with the file name input to the current selected location.
Done		Return to the higher level menu.

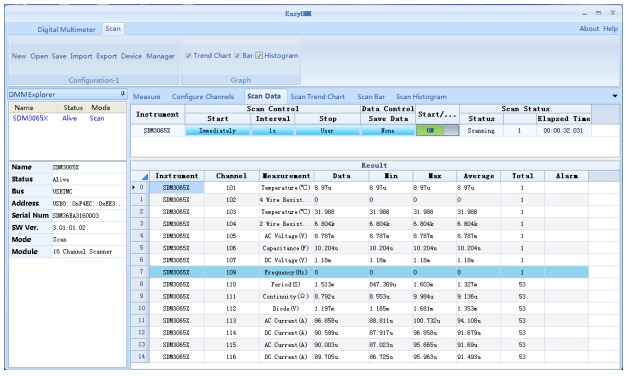
Remote operations

The SDM3000 series can be controlled remotely by using the SIGLENT EasyDMM software. It allows users to easily select the measurement function and range for each channel and start acquiring measurement data. With a rich online help system, the user is able to create a virtual instrument on the PC for data collection and instrument control. During the scanning period, the measurement data can be viewed directly on the screen or viewed graphically using trend chart, bar and histogram graph types. The data can then be automatically or manually saved to a database or exported as a CSV files

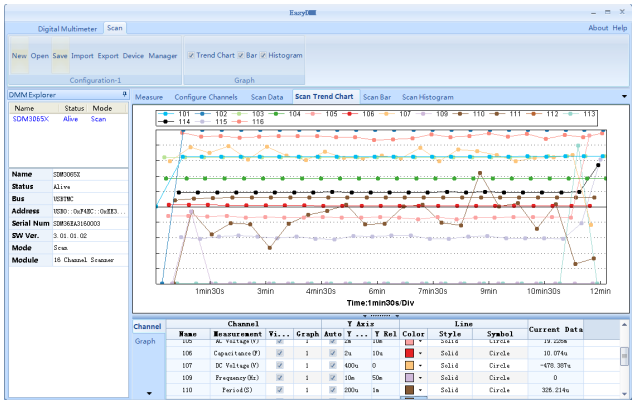
Channel Configuration



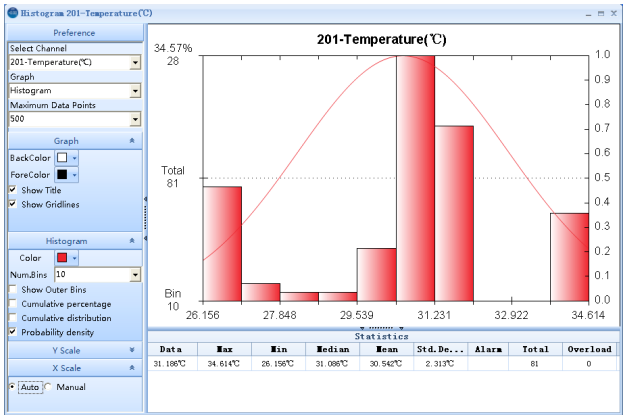
Data Acquisition



Trend Chart



Histogram



The latest version of EasyDMM can be downloaded for free from the SDM3000 series of digital multimeter. Take a look at www.siglent.com for more information.