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Find the *Keysight / Signametrics SM2010* at our website: ***Click HERE***

4-1/2 Digit Multimeters

For the PC ISA Bus — SM-2010 Products



SM-2010 shown without protective covers

Description

The SM-2010 sets a new standard for low cost, precision measurement in the PC. It implements a full featured, versatile 4-1/2 digit DMM that plugs into any half size PC ISA bus slot and, best of all, costs less than $700. The SM-2010 couples the convenience of PC based data analysis with all the functionality, performance and durability of a bench top multimeter. Need to measure differentially a millivolt floating at 200V above system ground?….Not a problem with the SM-2010.

Signal leads from the device under test connect directly to the SM-2010. There are no additional power or data cables to a separate bench top instrument. It's all inside your PC for minimum foot print and maximum ease of use.

Your PC controls the SM-2010 and implements its front panel with a Windows based display. Point and click control is provided with your mouse. You can choose control program options ranging from very easy to use to the flexibility of a programming language. The easiest to use option is shown below. It's a control panel emulating the function of a single control, auto-ranging, hand-held DMM. There is no easier way to implement precision measurement in the PC.



Automate your application using popular packages like ATEasy or TestPoint. Alternately you can use Visual Basic or C to develop language based applications. To get you started, source code for two virtual front panels (written in Visual Basic) are supplied with your SM-2010(CT).

For AC applications, frequency counting and period measurement are available with the SM-2010CT model.

The front end of the SM-2010 has 250 V of isolation and protection. It is rugged enough to handle inadvertent over voltage events and maintain accuracy.

Hardware Features

- **Flexible, full featured autoranging DMM**
- **DC & AC Volts, Current & Ohms, each fully protected**
- **Measure 10µV to 250 V**
- **Up to 200 measurements/sec**
- **10Hz to 50kHz true RMS ACV**
- **Optional frequency counter 5 Hz to 100kHz**
- **Power management**
- **250V isolation barrier**

Software Features

- **Extensive Windows support for Win 3.x, Win 95, Win NT (opt.)**
- **"No Programming" front panels**
- **Language support - Visual Basic, MSVisual C++, Borland C++**
- **Package support - ATEasy driver, DLLs interface to LabWindows CVI, TestPoint, and MatLab**

Applications

- **Automated production testing**
- **Laboratory automation**
- **OEM equipment**
- **Portable field data acquisition**

Models

SM-2010	$695
Full featured 4-1/2 digit DMM	
SM-2010CT	$795
Same as SM-2010 with frequency counter and period measurement	
SM-2010 Win NT S/W®	$195

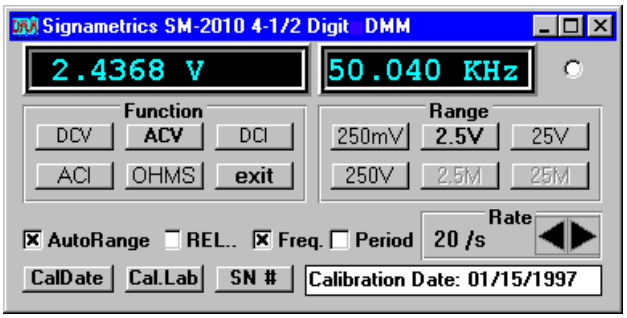
Signametrics
Precision Instruments for the PC

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Use The "No Programming" Panel

Software for two control panels comes with your SM-2010 allowing you to start using your DMM immediately. The control panels provide point and click control over all instrument functions. The simplest one (shown on the front page) emulates the function of an autoranging hand-held DMM. The full control panel shown to the right allows complete control over all functions of the SM-2010. If you want to make changes, the control panel application programs (sources written in Visual Basic) are part of the bundled software supporting Windows 3.x and Windows 95.



Packages Simplify Application Development

Data acquisition and ATE packages can be used to configure SM-2020 applications. These packages facilitate quick and easy development of complete applications using either graphical or task list based configuration techniques. Minimal, if any, language based programming is required. SM-2010 driver support is available for ATEasy. Windows DLLs allow interface to LabWindows CVI, TestPoint, and Matlab.

Language Based Applications

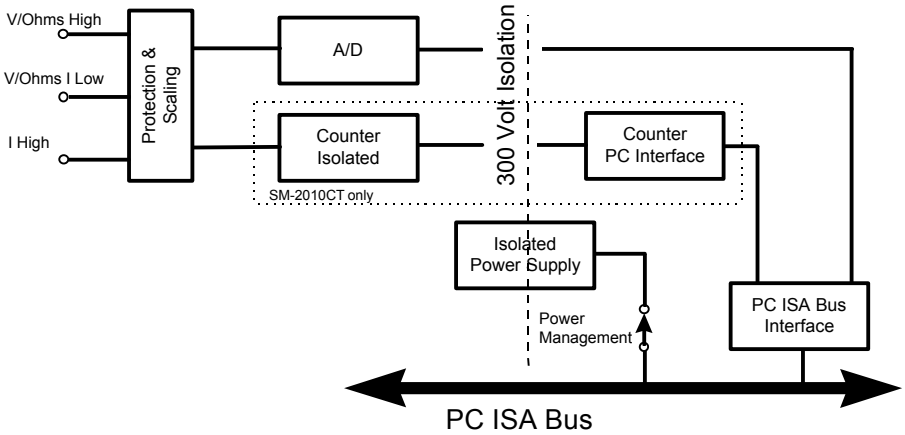
Language based programming allows the highest level flexibility in configuring an application. Drivers are provided with the SM-2010 to support application development in a variety of language and operating system environments. The following table summarizes driver availability:

	DOS	Win 3.X	Win 95
Control Panel		X	X
MS/Borland C	X		
Visual Basic 3.0		X	X
Visual Basic 4.0			X
16 bit DLL		X	X
32 bit DLL			X
32 bit OCX			X

Drivers for DOS, Windows 3.x, Windows 95 are included with each SM-2010. These drivers implement 30 well documented functions. The .OCX control can easily be linked to a wide variety of Windows 95 applications. It is also a handy tool for off line control of the SM-2010 during development.

Optional 32 bit support SW for Windows NT is available. Call or EMail for a separate data sheet.

Block Diagram



Signametrics
Precision Instruments for the PC

Specifications SM-2010 and SM-2010CT

DC Voltage ± (% of reading + Number of counts)

Range	Full Scale 4 1/2 Digits	Resolution	One Year Accuracy 18ºC to 28ºC
250 mV	±250.00 mV	10 µV	0.03 + 2
2.5 V	±2.5000 V	100 µV	0.03 + 1
25 V	±25.000 V	1 mV	0.03 + 1
250 V	±250.00 V	10 mV	0.03 + 1

Input Resistance: > 1000 MΩ on 250 mV and 2.5V ranges. 10 MΩ on 25V and 250V ranges.
Settling Time: 1 second to 2 counts of final reading on range.

Resistance ± (% of reading + Number of counts)

Range	Full Scale 4 1/2 Digits	Resolution	One Year Accuracy 18ºC to 28ºC
250 Ω	250.00 Ω	10 mΩ	0.03 + 2
2.5 kΩ	2.5000 kΩ	100 mΩ	0.03 + 2
25 kΩ	25.000 kΩ	1 Ω	0.03 + 2
250 kΩ	250.00 kΩ	10 Ω	0.05 + 2
2.5 MΩ	2.5000 MΩ	100 Ω	0.2 + 2
25 MΩ	25.000 MΩ	1 kΩ	1.0 + 2

Maximum Allowable Input: 250V DC or rms AC.
Open Circuit Voltage: < 5 V on all ranges.
Settling Time: 2 seconds to within 1 count of final reading on range.

DC Current ± (% of reading + Number of counts)

Range	Full Scale 4 1/2 Digits	Resolution	One Year Accuracy 18ºC to 28ºC
2.5 mA	±2.5000 mA	100ηA	0.4 + 5
25 mA	±25.000 mA	1 µA	0.3 + 2
250 mA	±250.00 mA	10 µA	0.3 + 5
2.5A	±2.5000 A	100 µA	0.5 + 2

Burden Voltage: < 1 V on all ranges.
Overload Protection: 2.5A fuse (250V).

AC Voltage, True RMS (AC coupled) ± (% of reading + Number of counts)

Range	Frequency	Full Scale 4 1/2 Digits	One Year Accuracy 18ºC to 28ºC
250 mV	10 Hz - 45 Hz	250.00 mV	3.0 + 40
	45 Hz - 5 kHz		0.3 + 35
	5 kHz - 20 kHz		0.8 + 35
2.5V - 250V	10 Hz - 45 Hz	2.5000V, 25.000V, 250.00V	3.0 + 30
	45 Hz - 5 kHz		0.3 + 20
	5 kHz - 20 kHz		0.7 + 30

Input Impedance: 1 MΩ in parallel with < 75 pF.
Settling Time: 2 second to 20 counts of final reading on range.

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AC Current, AC + DC True RMS (AC coupled) ± (% of reading + Number of counts)

Range	Frequency	Full Scale 4 1/2 Digits	One Year Accuracy 18ºC to 28ºC
2.5 mA - 2.5 A	10 - 45 Hz	2.5000 mA, 25.000 mA, 250.0 mA, 2.5000A	1.0 + 30
	45 - 1 kHz		0.9 + 20
	1 kHz - 5 kHz		1.2 + 30

Burden Voltage: < 1 V on all ranges.
Overload Protection: 2.5A fuse (250V).

Frequency Measurement (SM-2010CT only)

Range: 5Hz - 100 kHz.
Sensitivity: Input Voltage > 250 mV up to 50 kHz, > 2V up to 100 kHz.
Best Resolution: 1 mHz.
Frequency Uncertainty: 100 ppm.

General Specifications:

Reading Rate: 200 readings/sec to 1 reading/sec.
Physical Size: Half length ISA card.
Typical Power Requirements: +5 V, less than 100 mA. Can be turned on/off by software control.
Isolation: Input COM to Computer Ground, 250 V DC or rms AC.

Software: Windows 3.1 DLL, VB control panels, DOS .LIB for MS-Visual C++® and Borland C++®, Windows 95 Drivers, OCX and control panels.
Optional Software: Windows NT Drivers
Terminals: Three safety jacks -- Volts/Ohms High, Current High, Low.

Warranty

Signametrics products are warranted for a period of one year from date of delivery against defects in material or workmanship. Returned product will either be repaired or replaced at ***Signametrics'*** option.

Company Background - Signametrics Corporation

Signametrics Corporation manufactures precision instruments for the PC environment. The Company's products are aimed at applications requiring a combination of a high quality instrument with the PC's ability to automate applications. ***Signametrics*** products plug in to the PC ISA bus to offer cost effective, compact solutions for a wide range of automated test and measurement requirements.

The ***Signametrics*** design team has many years of experience designing bench top instruments. The result is a family of PC instruments that maintain accuracy and performance even in the PC's electrically noisy environment. ***Signametrics*** instruments are designed to sustain, without damage, the inevitable over voltage events that occur with bench top instruments. Attention to reliability in the design phase results in instruments that typically demonstrate 50,000 hour MTBF in operation.

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