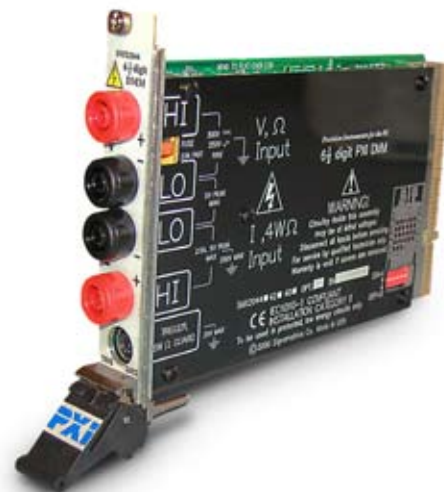


# SMX204x Series

## 6½ DIGIT DIGITAL MULTIMETER

- Flexible, full-featured auto-ranging DMM
- DC and AC volts and current. 2-wire and 4-wire Ohms
- AC True RMS measurements, 10 Hz to 100 kHz
- Measure 1  $\mu$ V to 330 V
- Self-calibrating
- Up to 1,000 rps
- 1 Hz to 300 kHz frequency measurement
- 300 V isolation barrier
- Inductance, capacitance, and leakage
- 6-wire guarded resistance measurement



## DESCRIPTION

The SMX2040 plugs into any PXI or CompactPCI chassis to provide a combination of resolution, accuracy and speed that surpasses rivals. A 6½ digit display, 0.006% basic DCV accuracy and 1,000 rps assures you of measurements that are accurate, fast and repeatable. The SMX2044 adds a comprehensive repertoire of measurements and source functions. Both measurements and sourcing functions are isolated from the PXI bus and are therefore truly differential. An on-board controller responds to high level commands from the PXI bus, minimizing overhead.

The SMX2040 series is designed as a universal, multifunction DMM. Measurements commonly associated with "high-end" system DMMs are standard features with the SMX2040 family. Functions include 2-wire, 4-wire and 6-wire guarded resistance measurements, inductance and capacitance, leakage and temperature, RMS and peak-to-peak, frequency and timing, and sourcing of voltage and current. The SMX2044 is best suited for applications demanding precision sources with simultaneous measurements such as parametric testing; the SMX2040 is best suited where basic DMM functions are required.

The SMX2040 series' unique "Relative" function allows you to remove lead resistance or other fixed offsets in your measurement as well as perform percent deviation and dB measurements. An external, level controlled trigger can be used for capturing single-shot events, with up to 64 measurements being stored on-board.

## FEATURES

### 6-WIRE GUARDED RESISTANCE MEASUREMENT (SMX2044)

The SMX2044 provides a guarded 6-wire resistance measurement method that makes resistance measurements when the resistor-under-test has other shunting paths, which can cause inaccurate readings. This method isolates the resistor-under-test by maintaining a guard voltage at a user defined node which allows accurate measurement of resistors even in the presence of other shunting current paths. Applications include analog in-circuit and resistor network measurements.

### EXTENDED RESISTANCE (SMX2044)

The SMX2044 offers a Leakage Measurement configuration, which is useful for the testing of cables, printed circuit boards, connectors, and semiconductors.

### INTERNAL TEMPERATURE (SMX2044)

A special on-board temperature sensor allows monitoring of the DMM's internal temperature. This provides the means to determine when to run the self-calibration function (S-Cal) for the DMM, as well as predicting the performance of the DMM under different operation conditions. When used properly, this measurement can enhance the accuracy and stability of the DMM. It also allows monitoring of the PXI chassis' internal temperature.

### CAPACITANCE MEASUREMENT (SMX2044)

The SMX2044 measures capacitance using a differential charge

# SMX204x Series

slew method and is usable down to a few pF. With the exception of the 10 nF range, each of the ranges has a reading span from 5% of range to full scale. For testing surface mount parts, the optional Signametrics SMT Tweezer probes are recommended.

## INDUCTANCE MEASUREMENT (SMX2044)

The SMX2044 measures inductance and Q using a precision AC source with a frequency range of 20 Hz to 75 kHz.

## SOURCING FUNCTIONS (SMX2044)

The SMX2044 supports a number of sourcing functions, providing outstanding versatility for a variety of applications. All of the available sources—VDC, VAC, and IDC—are isolated, which allows sourcing with a significant common mode voltage as well as providing the ability to connect several SMX2044 units in parallel for increased DC current, or in series for increased DC voltage.

## SOFTWARE

The SMX204x Series is supplied with a virtual instrument panel, which includes a 32-bit DLL driver library and documentation. The virtual panel can be used to interactively adjust and control the

instrument from a window that displays the current instrument settings and measurements.

In addition, various interface files provide support for a variety of programming tools and languages such as ATEasy, Microsoft® and Borland® C/C++, Microsoft Visual Basic®, Borland Delphi, LabVIEW, and more.

## PROGRAMMING

- Supports Plug-and-Play™ operating systems.
- Intuitive GUI gets you up and making measurements in minutes.
- Windows 98/95 and XP support for both textual programming languages such as ATEasy, Visual Basic, C, C++, and LabWindows/CVI, and graphical environments such as LabView and HPVee.

## APPLICATIONS

- Automated production testing
- Laboratory automation
- Portable/field test

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## SPECIFICATIONS

Specifications are verified according to the performance check procedures in the technical manual. Specifications not verified in the manual are either explanatory notes or general performance characteristics only.

### VOLTAGE, CURRENT, AND RESISTANCE

#### DC VOLTAGE

RANGE	FULL SCALE READING	RESOLUTION	ACCURACY 90 DAYS 23°C ± 5°C <sup>1</sup>	ACCURACY 1 YEAR 23°C ± 5°C <sup>1</sup>
330mV	330.0000mV	100nV	0.004 + 5.5 µV	0.007 + 8 µV
3.3V	3.300000V	1 µV	0.0025 + 12 µV	0.0045 + 17 µV
33V	33.00000V	10 µV	0.004 + 280 µV	0.007 + 330 µV
300V	330.0000V	100 µV	0.005 + 1.2 mV	0.008 + 1.5 mV

[1] Accuracy is % of reading + Volts

#### DC CURRENT

RANGE	FULL SCALE READING	RESOLUTION	ACCURACY 90 DAYS 23°C ± 5°C <sup>1</sup>	ACCURACY 1 YEAR 23°C ± 5°C <sup>1</sup>
3.3mA	3.30000mA	10nA	0.07 + 350 nA	0.1 + 400 nA
33mA	33.0000mA	100nA	0.06 + 2 µA	0.1 + 3 µA
330mA	330.000mA	1 µA	0.055 + 40 µA	0.075 + 60 µA
2.5A	2.50000A	10 µA	0.6 + 200 µA	0.65 + 350 µA

[1] Accuracy is % of reading + Amps

### AC VOLTS (RMS)

RANGE	FULL SCALE READING	RESOLUTION	FREQUENCY	ACCURACY 90 DAYS 23°C ± 5°C <sup>1</sup>	ACCURACY YEAR 23°C ± 5°C <sup>1</sup>
330mV(Signal >5mV)	330.000mV	100nV	10Hz - 20Hz	3.1 + 380 uV	3.2 + 430 µV
			20Hz - 47Hz	.93 + 170 uV	0.95 + 200 µV
			47Hz - 10KHz	.14 + 110 uV	0.15 + 120 µV
			10KHz - 50KHz	.6 + 200 uV	.63 + 230 µV
			50KHz - 100KHz	5.4 + 370 uV	5.6 + 400 µV
3.3V(Signal >10mV)	3.300000V	1 µV	10Hz - 20Hz	3.1 + 2.2 mV	3.2 + 2.5 mV
			20Hz - 47Hz	.96 + 1.5 mV	1.0 + 1.7 mV
			47Hz - 10KHz	0.055 + 1.1 mV	0.065 + 1.2 mV
			10KHz - 50KHz	0.65 + 1.3 mV	0.7 + 1.5 mV
			50KHz - 100 kHz	5.2 + 1.7 mV	5.3 + 2 mV
33V(Signal >100mV)	33.00000V	10 µV	10Hz - 20Hz	3.1 + 16 mV	3.3 + 20 mV
			20Hz - 47Hz	.96 + 14 mV	1.0 + 16 mV
			47Hz - 10KHz	0.065 + 11 mV	0.073 + 13 mV
			10KHz - 50KHz	0.33 + 21 mV	0.35 + 25 mV
			50KHz - 100KHz	2.2 + 35 mV	2.4 + 40 mV
250V <sup>2</sup> (Signal >1V)	250.0000V	100 µV	10Hz - 20Hz	3.1 + 160 mV	3.3 + 200 mV
			20Hz - 47Hz	0.96 + 130 mV	1.0 + 150 mV
			47Hz - 10KHz	0.045 + 110 mV	0.06 + 130 mV
			10KHz - 50KHz	0.4 + 170 mV	0.45 + 200 mV
			50KHz - 100KHz	2.8 + 240 mV	3.2 + 300 mV

[1] Accuracy is % of reading + Volts. [2] Signal is limited to 8x10<sup>6</sup> Volt Hz product.

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## AC CURRENT (RMS)

RANGE	FULL SCALE READING	RESOLUTION	FREQUENCY	ACCURACY 90 DAYS $23^{\circ}\text{C} \pm 5^{\circ}\text{C}^1$	ACCURACY 1 YEAR $23^{\circ}\text{C} \pm 5^{\circ}\text{C}^1$
3.3mA(Signal >50 $\mu\text{A}$ )	3.30000mA	1nA	10Hz - 20Hz	$2.7 + 4 \mu\text{A}$	$2.9 + 4 \mu\text{A}$
			20Hz - 47Hz	$0.9 + 4 \mu\text{A}$	$1.0 + 4 \mu\text{A}$
			47Hz - 1KHz	$0.08 + 3 \mu\text{A}$	$0.12 + 4 \mu\text{A}$
			1KHz - 10KHz	$0.14 + 4 \mu\text{A}$	$0.22 + 4 \mu\text{A}$
33mA(Signal >500 $\mu\text{A}$ )	33.0000mA	10nA	10Hz - 20Hz	$2.6 + 30 \mu\text{A}$	$2.8 + 30 \mu\text{A}$
			20Hz - 47Hz	$0.9 + 30 \mu\text{A}$	$1.0 + 30 \mu\text{A}$
			47Hz - 1KHz	$0.15 + 20 \mu\text{A}$	$0.16 + 30 \mu\text{A}$
			1KHz - 10KHz	$0.3 + 40 \mu\text{A}$	$0.4 + 40 \mu\text{A}$
330mA(Signal >5 mA)	330.000mA	100nA	10Hz - 20Hz	$2.7 + 400 \mu\text{A}$	$2.8 + 400 \mu\text{A}$
			20Hz - 47Hz	$0.9 + 400 \mu\text{A}$	$1.0 + 400 \mu\text{A}$
			47Hz - 1KHz	$0.17 + 180 \mu\text{A}$	$0.22 + 220 \mu\text{A}$
			1KHz - 10KHz	$0.4 + 350 \mu\text{A}$	$0.6 + 400 \mu\text{A}$
2.5A(Signal >50mA)	2.50000A	1 $\mu\text{A}$	10Hz - 20Hz	$2.5 + 4.5 \text{ mA}$	$2.7 + 5 \text{ mA}$
			20Hz - 47Hz	$0.8 + 6 \text{ mA}$	$0.9 + 6 \text{ mA}$
			47Hz - 1KHz	$0.63 + 3.8 \text{ mA}$	$0.65 + 4 \text{ mA}$
			1KHz - 10KHz	$0.62 + .54 \text{ mA}$	$0.7 + 5 \text{ mA}$

[1] Accuracy is % of reading + Amps

## RESISTANCE 2-, 4-, AND 6-WIRE GUARDED OHMS <sup>1</sup>

RANGE	FULL SCALE READING	CURRENT SOURCE	RESOLUTION	ACCURACY 90 DAYS $23^{\circ}\text{C} \pm 5^{\circ}\text{C}^{2,3}$	ACCURACY 1 YEAR $23^{\circ}\text{C} \pm 5^{\circ}\text{C}^{2,3}$
33 $\Omega$ (4)	33.00000 $\Omega$	10mA	10 $\mu\Omega$	$0.005 + 1.5 \text{ m}\Omega$	$0.008 + 2 \text{ m}\Omega$
330 $\Omega$	330.0000 $\Omega$	1mA	100 $\mu\Omega$	$0.0046 + 5 \text{ m}\Omega$	$0.0076 \text{ m}\Omega$
3.3K $\Omega$	3.30000K $\Omega$	1mA	1m $\Omega$	$0.003 + 32 \text{ m}\Omega$	$0.005 + 33 \text{ m}\Omega$
33K $\Omega$	33.00000K $\Omega$	100 $\mu\text{A}$	10m $\Omega$	$0.0033 + 330 \text{ m}\Omega$	$0.006 + 350 \text{ m}\Omega$
330K $\Omega$ (5)	330.0000K $\Omega$	10 $\mu\text{A}$	100m $\Omega$	$0.007 + 4\Omega$	$0.009 + 5\Omega$
3.3M $\Omega$	3.30000M $\Omega$	1 $\mu\text{A}$	1 $\Omega$	$0.03 + 50\Omega$	$0.04 + 70\Omega$
33M $\Omega$	33.0000M $\Omega$	100nA	100 $\Omega$	$0.13 + 500\Omega$	$0.2 + 600\Omega$
330M $\Omega$ (4)	330.00M $\Omega$	10nA	10K $\Omega$	$1.4 + 60 \text{ k}\Omega$	$2.0 + 80 \text{ k}\Omega$

[1] 6-wire guarded only with SM2044 with maximum guard current of 20mA

[2] Accuracy is % of reading +  $\Omega$

[3] With reading rate set to 2 rps, within one hour of zero Ohms, using relative control

[4] Only available with the SM2042/44

[5] 4-wire ohms is available to 330K range

## LEAKAGE (SM2044)

LEAKAGE READING	VOLTAGE RANGE	ACCURACY $23^{\circ}\text{C} \pm 5^{\circ}\text{C}$ ONE YEAR <sup>1</sup>
1.00nA to 100.00nA	-10V to + 10V	$2 + 350\text{pA}$
100.00nA to 1000.00nA	-9V to + 9V	$1.2 + 2\text{nA}$
1000.00nA to 3300.00nA	-7V to + 7V	$1.5 + 20\text{nA}$

[1] Error does not include external shunt resistor's tolerance.

# SMX204x Series

## TEMPERATURE (SM2042 AND SM2044)

RTD TYPE 1	Ro ( )	RESOLUTION	TEMPERATURE RANGE	ACCURACY 23°C ± 5°C ONE YEAR <sup>1</sup>
pt385, pt3911, pt3916, pt3926	100 , 200W	0.01°C	-150° to 650°C	±0.06 °C
pt385, pt3911, pt3916, pt3926	500 , 1KW	0.01°C	-150° to 650°C	±0.03 °C
Cu (Copper)	Less than 12	0.01°C	-100° to 200°C	±0.18 °C for temp. <= 20°C, otherwise ±0.05 °C
Cu (Copper)	Higher than 90	0.01°C	-100° to 200°C	±0.10 °C for temp. <= 20°C, otherwise ±0.05 °C

[1] These specifications are valid for 4-wire type RTD. Reading rate of 2 rps or slower. Does not include RTD probe error.

## PEAK TO PEAK, CREST AND MEDIAN (SM2044)

### ACV PEAK-TO-PEAK <sup>1</sup>

ACV RANGE	FULL SCALE READING(V <sub>P-P</sub> )	RESOLUTION	LOWEST SPECIFIED INPUT VOLTAGE(V <sub>P-P</sub> )	ACCURACY 23°C ± 5°C ONE YEAR <sup>2</sup>
330mV	1.85V	1mV	0.1V	1.5 ± 10 mV
3.3V	18.5V	10mV	1V	1.4 ± 70 mV
33V	185V	100mV	10V	1.0 ± 700 mV
250V	850V	1V	100V	1.0 ± 6V

[1] Specified from 30Hz to 10Kz

[2] Accuracy is % of reading + Volts

### AC CREST FACTOR <sup>1</sup>

ACV RANGE	RESOLUTION	LOWEST SPECIFIED INPUT VOLTAGE (VP-P)	TYPICAL ACCURACY 23°C ± 5°C ONE YEAR <sup>2</sup>
330mV	0.01	0.1V	2.2 +/- 0.3
3.3V	0.01	1V	3.1 +/- 0.1
33V	0.01	10V	2.0 +/- 0.1
250V	0.01	100V	2.0 +/- 0.1

[1] Specified from 30Hz to 10KHz. Allowed signal frequency range is 30Hz to 30KHz.

[2] Accuracy is % of reading + Constant

### AC MEDIAN <sup>1</sup>

ACV RANGE	FULL SCALE READING	RESOLUTION	ACCURACY 23°C ± 5°C ONE YEAR <sup>2</sup>
330mV	± 0.950V	1mV	2.0 ± 17mV
3.3V	± 9.50V	10mV	3 ± 160mV
33V	± 95.0V	100mV	3 ± 1.4V
250V	± 350V	1V	3% ± 12V

[1] Specified from 30Hz to 10KHz; Allowed signal frequency range is 30Hz to 30KHz

[2] Accuracy is % of reading + Volts

# SMX204x Series

## TIMING THRESHOLD DAC

SELECTED VAC RANGE	THRESHOLD RANGE	THRESHOLD DAC RESOLUTION	TYPICAL ONE YEAR SETTING UNCERTAINTY <sup>1</sup>
330mV	-1.0V to +1.0V	0.5mV	0.2% + 4mV
3.3V	-10.0V to +10.0V	5.0mV	0.2% + 40mV
33V	-100.0V to +100.0V	50mV	0.2% + 0.4mV
250V	-500V to +500V	500mV	0.2% + 4 V

[1] Accuracy  $\pm$  (% of setting + volts)

## ACV FREQUENCY

FREQUENCY RANGE	1Hz - 100Hz	100Hz – 1KHz	1KHz – 10KHz	10KHz – 100KHz	100 kHz -300 kHz
RESOLUTION	1mHz	10mHz	100mHz	1Hz	1 Hz
UNCERTAINTY IS $\pm 0.002\%$ OF READING $\pm$ ADDER SHOWN	4mHz	20mHz	200mHz	2Hz	5 Hz
INPUT SIGNAL RANGE <sup>1</sup>	10 - 200% of range	10 - 200% of range	10 - 200% of range	10 - 200% of range	25 - 200% of range

[1] Input RMS voltage required for a valid reading. For example, 10% -200% of range indicates that in the 330 mVAC range, the input voltage should be 33 mV to 660mV.

## ACI FREQUENCY

FREQUENCY RANGE	1Hz - 100Hz	100Hz – 1KHz	1KHz – 10KHz	10KHz – 100KHz
RESOLUTION	1mHz	10mHz	0.01% $\pm$ 200mHz	0.01% $\pm$ 2Hz
UNCERTAINTY	.0.01% +/- 4 mHz	.0.01% +/- 20 mHz	.0.01% +/- 200 mHz	.0.01% +/- 2 Hz
INPUT SIGNAL RANGE, 3.3MA RANGE	10% - 500%	10% - 500%	10% - 500%	10% - 500%
INPUT SIGNAL RANGE, 33MA RANGE	50% - 100%	50% - 100%	50% - 100%	50% - 100%
INPUT SIGNAL RANGE, 330MA, 2.5A RANGES	50% -110%	50% - 100%	50% - 100%	50% - 100%

## DUTY CYCLE

FREQUENCY RANGE	1Hz - 100Hz	100Hz – 1KHz	1KHz – 10KHz	10 kHz - 100 kHz
RESOLUTION	0.02%	0.2%	2%	20%
TYPICAL UNCERTAINTY IS $\pm 0.03\%$ OF READING $\pm$ ADDER SHOWN	0.03%	0.3%	3%	30%
FULL SCALE READING	100.00%	100.00%	100.00%	100.00%

## PULSE WIDTH

POLARITY	FREQUENCY RANGE	RESOLUTION	WIDTH RANGE	UNCERTAINTY
POSITIVE AND NEGATIVE PULSE	1Hz to 100KHz	2 $\mu$ S	2 $\mu$ S to 1S	0.01% $\pm$ 4 $\mu$ S

# SMX204x Series

## CAPACITANCE MEASUREMENT (2042, 2044)

RANGE	FULL SCALE READING 4 ½ DIGITS	RESOLUTION	ACCURACY 1 YEAR 23°C ± 5°C <sup>1</sup>
10nF	11.999pF	1pF	2.1 ± 5 pF
100nF	119.99nF	10pF	1.0
1 µF	1.1999 µF	100pF	1.0
10 µF	11.999 µF	1nF	1.0
100 µF	119.99nF	10nF	1.0
1mF	1.1999mF	100nF	1.2
10mF	11.999mF	1µF	2

[1] Accuracy is % of reading + Farads.. Within one hour of zero, using Relative Control. Accuracy is specified for values higher than 5% of the selected range with the exception of the 10nF range, which is capable of measuring down to 0pF

## INDUCTANCE MEASUREMENT (SMX2044)

RANGE	FULL SCALE READING	RESOLUTION	DEFAULT MEASUREMENT FREQUENCY	ACCURACY 1 YEAR 23°C ± 5°C <sup>1</sup>
33 µH	33.00 µH	1nH	75KHz	3 + 500 nH
330 µH	330.0 µH	10nH	50KHz	2 + 3 µH
3.3mH	3.300mH	100nH	4KHz	1.5 + 25 µH
33mH	33.00mH	1 µH	1.5KHz	1.5 + 200 µH
330mH	330.0mH	10 µH	1KHz	2.5 + 3mH
3.3mH	3.300 mH	100 µH	100KHz	3 + 35mH

[1] Accuracy is % of reading + inductance. Accuracy is specified for values greater than 5% of the selected range.

## DC VOLTAGE SOURCE

PARAMETER	CLOSED LOOP	OPEN LOOP
OUTPUT VOLTAGE RANGE	-10.000V to +10.000V	
TYPICAL SOURCE/SINK CURRENT AT 5 V OUTPUT	5mA	
DAC RESOLUTION	18-bits	12-bits
ACCURACY 23°C ± 10°C - 1 YEAR	0.015% ± 350 µV	1.0% ± 35mV
TYPICAL SETTING TIME	3s	1ms
TYPICAL SOURCE RESISTANCE	250 ohms	

[1] Accuracy is % of reading + Volts

## AC VOLTAGE SOURCE

PARAMETER	CLOSED LOOP	OPEN LOOP
OUTPUT VOLTAGE RANGE	.14 to 20V peak-to-peak (50 mV to 7.1 V RMS)	
DAC RESOLUTION	16-bits	12-bits
TYPICAL OUTPUT CURRENT AT 3.4 V RMS	3.5 ma RMS	
ACCURACY 18 TO 28°C 1 YEAR <sup>1</sup>	Programmed ACV value ± 2mV	Programmed ACV value + 0.8% ± 8mV
TYPICAL SETTING TIME	10s	1.5s
TYPICAL SOURCE RESISTANCE	250 ohms	
FREQUENCY RANGE / RESOLUTION	2Hz to 75KHz / 2Hz	
FREQUENCY STABILITY	100ppm ± 1Hz	

[1] Accuracy is % of reading + Volts

# SMX204x Series

## DC CURRENT SOURCE

RANGE	COMPLIANCE VOLTAGE	RESOLUTION	MINIMUM LEVEL	ACCURACY <small>23°C ± 5°C ONE YEAR</small>
1.25 $\mu$ A	4.2V	500pA	1nA	1% + 10nA
12.5 $\mu$ A	4.2V	5nA	10nA	1% + 100nA
125 $\mu$ A	4.2V	50nA	100nA	1% + 500nA
1.25mA	4.2V	500nA	1 $\mu$ A	1% + 5 $\mu$ A
12.5mA	4.0V	5 $\mu$ A	10 $\mu$ A	1% + 50 $\mu$ A

[1] Accuracy is % of reading + Amps

## OTHER SPECIFICATIONS

TEMPERATURE COEFFICIENT	All Functions Less than 0.1 x accuracy specification per °C at 23°C ± 5°C
READING RATE	(User-selectable) 0.5 to 1,000 rps, up to 10 rps for 6-½ digits; up to 30 rps for 5-½ digits
HARDWARE INTERFACE	Single 3U PXI or CompactPCI slot
OVERLOAD PROTECTION	(Voltage inputs) 330VDC, 250VAC, 50VAC (DIN Connector)
ISOLATION	330VDC, 250VAC from Earth Ground
MAXIMUM INPUT(VOLT X HERTZ)	8x10 <sup>6</sup> Volt x Hz Common Mode input (across Voltage HI & LO). 1x10 <sup>6</sup> Volt x Hz Common Mode input (across Voltage HI or LO) relative to Earth Ground)
SAFETY	Designed to IEC 1010-1 guidelines, for IEC 664 Installation Category II. All DMM inputs are to be based in protected, low energy circuits only. Approved.
CALIBRATION	Calibrations are performed at the factory in a computer with a 3°C internal temperature rise. All calibration constants are stored in a text file. Calibration can be performed by any calibration laboratory with the appropriate equipment.
TEMPERATURE RANGE	-10°C to 70°C, operating, -65°C to +85°C storage
POWER	+5VDC, 300mA maximum
SIZE	7" x 3.4", (standard PXI/CompactPCI 3U format)
DMM INTERNALTEMPERATURE MEASUREMENT (SMX2042,44)	+/- 2 2°C
CONNECTIONS	Connections to the SMX2040 series are made using 4 banana jacks (not included). A DIN connector on the SMX2044 series provides trigger input and the 6-wire guarded force and sense lines

## AC VOLTS – INPUT CHARACTERISTICS

INPUT RESISTANCE	1M $\Omega$ , shunted by < 100pF, all ranges
CREST FACTOR	3 at Full Scale, increasing to 7 at Low-est Specified Voltage
AC COUPLED SPECIFIED RANGE:	10Hz to 100KHz
TYPICAL SETTLING TIME	<0.5 sec to within 0.1% of final value
CMRR @ 50 OR 60 HZ WITH 1KW LEAD IMBALANCE	>60dB

## AC CURRENT – INPUT CHARACTERISTICS

BURDEN VOLTAGE	350mV RMS all Ranges
CREST FACTOR	3 at Full Scale, increasing to 7 at Lowest Specified Current
OVER CURRENT PROTECTED	2.5A fuse, top accessible

## EXTERNAL HARDWARE

INPUT ACTIVE VOLTAGE LEVEL RANGE	High: +3V to +15V Low: -15V to +0.8V
TRIGGER INPUT CURRENT	Min 1 ma, Max. 10 ma (TTL or CMOS logic levels)

## DC VOLTS – INPUT CHARACTERISTICS

INPUT RESISTANCE	
330MV & 3.3V RANGES	>10G ohms
33V & 330V RANGES	10M ohms
NOISE REJECTION	
NMRR 50, 60, 400HZ	>95dB
CMRR @ 10 RPS WITH 1KW LEAD IMBALANCE	>120dB
CMRR @ 10 RPS WITH 1K $\Omega$ LEAD IMBALANCE	>120dB



# SMX204x Series

## DC CURRENT – INPUT CHARACTERISTICS

BURDEN VOLTAGE	<350mV for all ranges
OVER CURRENT PROTECTED	2.5 A Fuse

## ORDERING INFORMATION

SMX-2040	6-½ Digit Digital Multimeter
SMX-2042	6-½ Digit Digital Multimeter with frequency and capacitance measurement functions
SMX-2044	6-½ Digit LCR Sourcing Digital Multimeter

# SMX204x Series

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