

DUAL INDEPENDENT & ISOLATED SOURCE MEASURE UNIT MODEL 52411

(Each SMU can supply $\pm 25V$ at $\pm 200mA$)

The Chroma 52411 is a single slot 3U PXI card that can host 2 programmable source/measure modules, SMU. Each SMU is independent and isolated and supplies full four-quadrant $\pm 25V$ at $\pm 200mA$. Each SMU has its own output connection through 6 wires, \pm force, \pm sense and \pm guards, maximizing precise measurements. Each SMU can force voltage or current and measure either voltage or current, FVM or FIMV. Both force and measurement circuitry utilize 18 bit DAC/ADC. There are 7 current force/measure ranges, from 200mA to 200nA. There are 6 voltage forcing ranges from $\pm 25V$ to $\pm 0.5V$. 12 full scale voltage measurement ranges allow the user to maximize reading resolution, ranges from $\pm 25V$ to $\pm 5mV$. The 52411 has a built in patented hardware sequence engine that uses deterministic timing to control each SMU. This allows for cross module/card synchronization.

Key Features

- Fully Floating output, allowing star ground connections
- 4 Quadrant Operation, FVM and FIMV
- 6 Force Voltage Ranges : $\pm 25V$, $\pm 10V$, $\pm 5V$, $\pm 2.5V$, $\pm 1V$, and $\pm 0.5V$
- 7 Force/Measure Current Ranges : $\pm 200mA$, 20mA, 2mA, 200 μA , 20 μA , 2 μA , and 200nA
- 12 Measure Voltage, Full Scale ranges : $\pm 25V$ to $\pm 5mV$
- 8 Loop Bandwidth/Slew Rate selections : 0.5V/usec to 0.02V/usec
- 6 wire connection : \pm Force, \pm Sense, and \pm Guard
- 18 bit ADC
- 18 bit DAC
- 12 bit programmable Compliance
- Calibration data stored in on-board NV Ram
- External +48V required



Chroma

SPECIFICATIONS

Voltage Force mode, any current range, FVMI		
Voltage Range	Resolution: \pm Volts	Accuracy $< \pm(\%value + offset)$
$\pm 25V$	190 μ V	0.05% + 1.9mV
$\pm 10V$	76 μ V	0.05% + 760 μ V
$\pm 5V$	38 μ V	0.05% + 380 μ V
$\pm 2.5V$	19 μ V	0.05% + 190 μ V
$\pm 1V$	7.6 μ V	0.05% + 76 μ V
$\pm 0.5V$	3.8 μ V	0.05% + 38 μ V
Current Force mode, any voltage range, FIMV		
Current Range	Resolution: \pm Amps	Accuracy $< \pm(\%value + offset)$
$\pm 200mA$	1.6 μ A	0.05% + 100 μ A
$\pm 20mA$	160nA	0.05% + 10 μ A
$\pm 2mA$	16nA	0.05% + 1 μ A
$\pm 200\mu A$	1.6nA	0.05% + 100nA
$\pm 20\mu A$	160pA	0.05% + 10nA
$\pm 2\mu A$	16pA	0.05% + 1nA
$\pm 200nA$	1.6pA	0.05% + 200pA

Slew Rate programmable 0.5V/ μ Sec to 0.02V/ μ Sec, RC curve

12 Voltage Measurement Ranges, differential voltage between \pm Sense lines		
Voltage Range	Resolution \pm Volts	Accuracy $\pm(\%value + offset)$
$\pm 25V$	190 μ V	0.05% + 1.9mV
$\pm 10V$	76 μ V	0.05% + 760 μ V
$\pm 5V$	38 μ V	0.05% + 380 μ V
$\pm 2.5V$	19 μ V	0.05% + 190 μ V
$\pm 1V$	7.6 μ V	0.05% + 76 μ V
$\pm 0.5V$	3.8 μ V	0.05% + 38 μ V
$\pm 250mV$	1.9 μ V	0.05% + 19 μ V
$\pm 100mV$	762nV	0.05% + 8 μ V
$\pm 50mV$	381nV	0.05% + 4 μ V
$\pm 25mV$	190nV	0.05% + 2 μ V
$\pm 10mV$	76nV	0.05% + 2 μ V
$\pm 5mV$	38nV	0.05% + 2 μ V
7 Current Measure Ranges		
Current Range	Resolution: \pm Amps	Accuracy $< \pm(\%value + offset)$
$\pm 200mA$	1.6 μ A	0.05% + 100 μ A
$\pm 20mA$	160nA	0.05% + 10 μ A
$\pm 2mA$	16nA	0.05% + 1 μ A
$\pm 200\mu A$	1.6nA	0.05% + 100nA
$\pm 20\mu A$	160pA	0.05% + 10nA
$\pm 2\mu A$	16pA	0.05% + 1nA
$\pm 200nA$	1.6pA	0.05% + 200pA

Additional Specifications		
Programmable Slew Rate	0.5V/ μ S to 0.02V/ μ S	
Power Consumption	14W per SMU	
Trigger Out/In	Minimum Pulse Width	1 μ S
	Maximum Rise Time	< 15nS
Trigger Edges	Rising / Falling	
Voltage / Current Compliance	12 bits Resolution	
Overload Protection	1 ~ 107% of Range, Compliance	
	2.5A Fast-Blow Fuse Protection	
Power Requirement	Nominal DC 48V	
Software & Operating Systems	Windows XP / Vista x86	
	Drivers are available for IVI, Labview and LabWidows/CVI. Additional support is provides for TestStand, Vidual Basic, C and C++	
Physical Characteristics		
Dimension	160 x 20 x 100 mm (W x H x D)	
Weight	286g	
Output Connector	DB 44	

All specifications are subject to change without notice. Please visit our website for the most up to date specifications.

ORDERING INFORMATION

52411 : Dual Independent and Isolated Source Measure Unit

Developed and Manufactured by :

CHROMA ATE INC.
致茂電子股份有限公司

HEADQUARTERS
66, Hwaya 1st Rd., Hwaya
Technology Park, Kueishan,
Taoyuan 33383, Taiwan
Tel: +886-3-327-9999
Fax: +886-3-327-8898
http://www.chromaate.com
E-mail: chroma@chroma.com.tw

U.S.A.
CHROMA ATE INC. (U.S.A.)
7 Chrysler Irvine, CA 92618
Tel: +1-949-421-0355
Fax: +1-949-421-0353
Toll Free: +1-800-478-2026

EUROPE
CHROMA ATE EUROPE B.V.
Morsestraat 32, 6716 AH Ede,
The Netherlands
Tel: +31-318-648282
Fax: +31-318-648288

CHINA
CHROMA ELECTRONICS
(SHENZHEN) CO., LTD.
8F, No.4, Nanyou Tian An
Industrial Estate, Shenzhen, China
PC: 518052
Tel: +86-755-2664-4598
Fax: +86-755-2641-9620

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