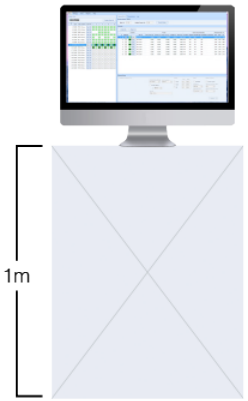
SpikeSafe™ DC / Continuous Pulse Current Source Specifications

Copyright © 2017, Vektrex. All rights reserved.
SpikeSafe current sources are protected by U.S. and foreign patents.
Specifications are subject to change.

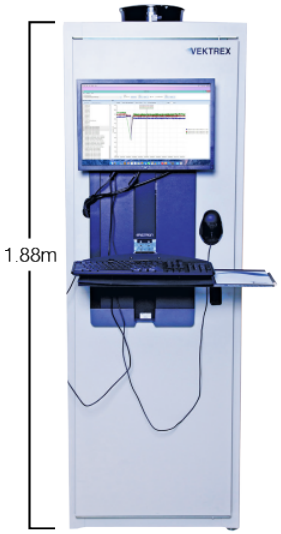
Mode Descriptions			Modes	
Mode	**Description**	**Typical Application**	**DCP**	**DCP +MODI**
DC	Constant current.	Any constant current application. LM-85, light measurement, characterization, R&D, production.	✓	✓
Continuous Pulse	Continuous current pulse train that transitions on and off according to configured pulse parameters.	Continuous pulse light measurements to reduce junction heating. Any other continuous pulse application.	✓	✓
Modulated Current (MODI)	A programmable sequence of DC current steps that define a waveform. Sequences may be finite or run indefinitely.	Cell phone flash emulation, rectifier ripple emulation. Requires purchase of optional Modulated Current function.		✓

Vektrex System Configuration Options

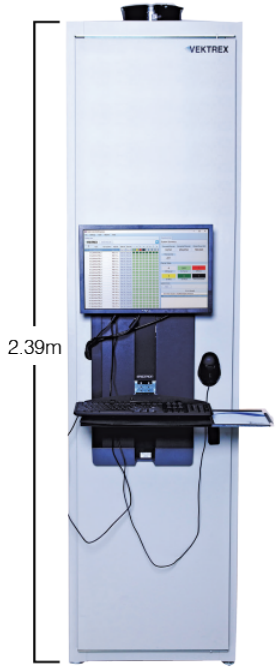
1 Source Module
Up to 8 Source Channels



Up to 8 Source Modules
64 Source Channels



Up to 24 Source Modules
192 Source Channels



Up to 32 Source Modules
256 Source Channels

DC / Continuous Pulse Current Sources

VEKTREX™

Specifications	Model (Max Current)											
	0.5	2	3	4	5	8	10	16	20	32	40	60
Overall												
Recommended Min Current[6]	339µA	5.9mA				11.8mA		23.6mA		47.3mA		285mA
Min Output Voltage	0V											
Max Output Voltage	50V, 100V, 200V, 300V, 400V					50V, 100V, 200V						50V
Independent Channels/Module	1, 2, 4, 8					1, 2, 4		1, 2		1		
Max Power, per Channel[4, 10]	200W	800W	1kW			1.6kW		3.2kW		6.4kW		3kW
Max Power, all Channels[4]	1.6kW	6.4kW	8kW			6.4kW						3kW
Output Conductor Pairs/Channel	1					2		4		8		
Conversion Mode	Buck/Boost				Buck	Buck/Boost		Buck				
Pulsing												
Pulse Width Range[9]	10µs-15000s											
Pulse Width Resolution	1µs											
Pulse Width Accuracy[2]	1µs	1.5µs	1µs					1.3µs				
Pulse Rise/Fall Time[3]	200ns-3µs	200ns-2µs	200ns-3µs					350ns-4.5µs				3µs-5µs
Typical Pulse Width Jitter	30ns											
Timebase Accuracy	50ppm											
Pulse Period Range	30µs-30000s, depending on settings											
Duty Cycle Range	0-100%											
Multi Channel Pulse Synchronization	Settable, synchronized (+/-1µs), or staggered (1/N*Period)									+/-2µs		
Low Range Current												
Max Current	40mA	200mA				400mA		800mA		1.6A		3.2A
Setpoint Resolution	1µA	5µA				10µA		20µA		40µA		80µA
Output Current Accuracy	0.05%+10µA	0.04%+175µA				0.04%+350µA		0.04%+700µA		0.04%+1.4mA		0.2%+8mA
Current Measure Accuracy[8]	0.7%+200µA	0.4%+5mA	0.1%+1mA			0.1%+2mA		0.1%+4mA		0.1%+8mA		0.5%+4mA
High Range Current												
Max Current	500mA	2A	3A	4A	5A	8A	10A	16A	20A	32A	40A	60A
Setpoint Resolution	10µA	50µA	100µA			200µA		400µA		800µA		1.6mA
Output Current Accuracy	0.05%+75µA	0.08%+500µA	0.08%+1mA			0.08%+2mA		0.08%+4mA		0.08%+8mA		0.3%+24mA
Current Measure Accuracy[8]	0.2%+1mA	0.4%+5mA				0.4%+10mA		0.4%+20mA		0.4%+40mA		0.5%+40mA

Specifications	Model (Max Current)											
	0.5	2	3	4	5	8	10	16	20	32	40	60
Misc.												
Nominal Current Ripple[1]	0.01%+160μA	<1A: 0.03%+300μA >1A: 0.06%	<1A: 0.03%+300μA >1A: 0.03%+500μA		<1A: 0.03%+300μA >1A: 0.012%+1mA		<1A: 0.03%+300μA >1A: 0.012%+2mA	<5A: 0.05%+250μA >5A: 0.02%+1.8mA		<5A: 0.05%+250μA >5A: 0.02%+4mA		<10A: 0.05%+200μA >10A: 0.02%+3mA
DC Ramp Rate: Low Speed Setting	10V/s, 50mA/s					10V/s, 100mA/s		10V/s, 200mA/s		10V/s, 400mA/s		
DC Ramp Rate: Default Setting	10V/s, 500mA/s					10V/s, 1A/s		10V/s, 2A/s		10V/s, 4A/s		
DC Ramp Rate: High Speed Setting	1000V/s, 50A/s					1000V/s, 100A/s		1000V/s, 200A/s		1000V/s, 400A/s		
Current Stability[7]	70ppm											
Voltage Measure Accuracy[8]	3%+1V											
Modulated Current[5, 10]												
Sequence Step Amplitude Range	0-100%											
Min Step Width	1ms											
Max Step Width	10s											
Step Width Accuracy	10μs											
Max Number of Steps	20											
Max Number of Step Sequences (Loops)	3											
Loop Count	1 to 32767 or infinite											
Current Rise/Fall Time Each Step[3]	5-8μs											

Specifications

Available Packages	
M-Module	Circuit card module compatible with Vektrex systems
2U-Chassis	Rack mount / benchtop chassis 89mmH x 483mmW x 635mmD (including handles)
External Interfaces	
Remote Pause	Optoisolated input, pauses output, selectable polarity
Remote Disable	Optoisolated input, halts output, selectable polarity
Output Current Drive Type	Differential drive
Output Cabling	Single or multiconductor twisted pair
Recommended Max Output Cable Length	20m
Input Power	
A/C Power	Selectable; single and three phase available; 50-60Hz
Power Conversion	Two-stage: DC-DC converter + analog current regulator
General	
Remote Control	100-base T Ethernet, TCP/IP with SCPI syntax
Monitoring System	Built-in aquisition system monitors & reports voltage, current, and fault conditions
Device Protection	2nd generation SpikeSafe™ protection including high-speed over current shutdown, slow start up, leakage detection and other protection algorithms
Calibration Interval	2 years
Operating Conditions	For indoor use only, 10 to 35C, 70%R.H., <2000m altitude
Cooling	Air cooled
Particulate Level	Clean lab conditions
Other	CE, RoHS

Notes

All specifications at 23C+/-5C, pulsing specifications: outside cable <3m

[1] RMS, 20MHz BW, primary frequency 100kHz or 200kHz

[2] Typical performance with automatic adjustements enabled, compensation settings tuned for best shape, I > 10% Imax

[3] Typical performance with compensation settings tuned for fastest rise and best pulse shape, I > 10% Imax

[4] With suitable auxiliary bulk power supply: Vbulk ≥ Compliance Voltage +20V for Buck models, Compliance Voltage/2 for Buck/Boost Models

[5] Requires MODI option

[6] Output current that guarantees 3% accuracy at calibration limit

[7] Typical p-p current variation over 1 hour, after warm up at 23C

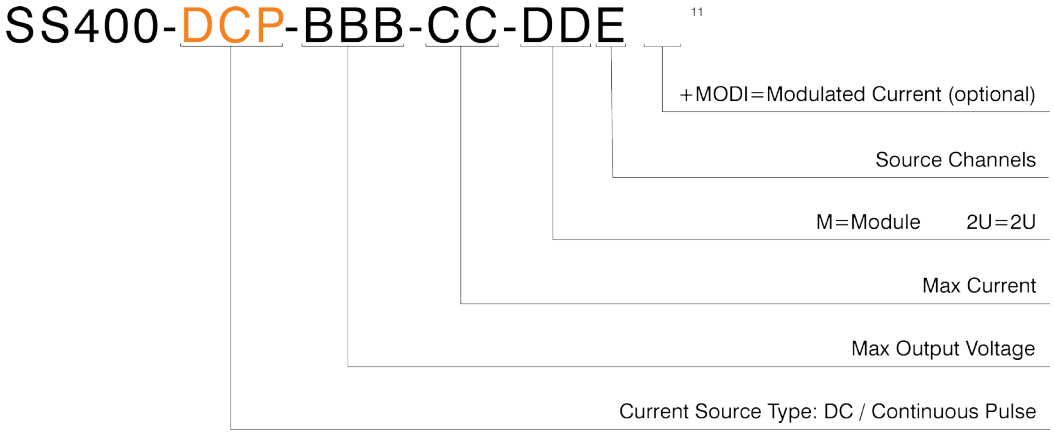
[8] 2-wire measurement designed for load monitoring. SpikeSafe DC / Continuous Pulse Current Sources may be paired with available high-speed DMM's for precise voltage and current measurements

[9] Longer pulse width ranges are possible when using the modulated current option

[10] Instantaneous internal power dissipation limited in MODI mode by (Vcompliance - Vload + 3) * Isetpoint ≤ 75W * n
Average internal power dissipation limited in MODI mode by (Vcompliance - Vload + 3) * Isetpoint ≤ 25W * n

[11] Additional power options must be specified. Please contact your sales representative or email sales@vektrex.com

Model Number Guide



Email **sales@vektrex.com** or visit **www.vektrex.com** to get more information and request a quote.