



**VEKTREX™**  
**Product Catalog**

## LM-80 Integrated Solutions

Reliable, Energy Efficient, High Capacity  
Applications: LM-79, LM-80-08, LM-80-15

### LM-80 Complete Turnkey Solution



- High Capacity Complete LM-80 Solution including:
- LM-80 Drive Electronics
- LM-80 Chambers (Integrated Thermal Control Systems)
- LM-80 Automated Light Measurement System
- LM-80 Software
- LM-80 Temperature Monitoring
- LM-80 Load Boards (n+1)
- Accessories and Services
- See details below

### LM-80 Drive Electronics



- High capacity complete driver system
- Approved for LM-80 usage (auditable)
- Modular and scalable architecture; configure to your needs
- Energy efficient
- SpikeSafe™ Current Sources = accurate, reliable drive current
- Max current to 60A
- Max compliance voltage to 400V
- DC and Continuous Pulse test modes
- LM-80 software (SpikeSafe Test and Reliability System - STARS)
- Use with your own chamber or bundle with the ITCS

## LM-80 Integrated Solutions

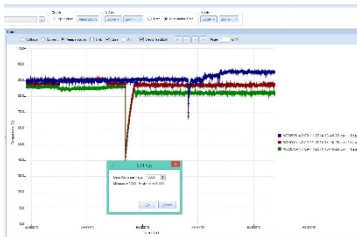
Reliable, Energy Efficient, High Capacity  
Applications: LM-79, LM-80-08, LM-80-15

### LM-80 Integrated Thermal Control System - ITCS (chamber)



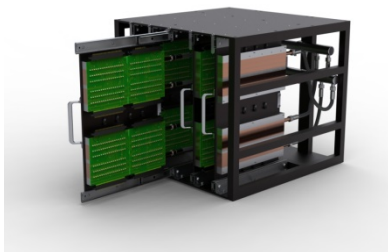
- High capacity integrated chamber
- Use for low/mid/high power devices, COB, arrays, modules, UV and VIS devices, laser diodes, VCSEL
- Instrumented for LM-80 temperature monitoring
- Active liquid cooling – chill and heat; uses plant water
- Energy efficient – low heat output to the environment
- Models to 5kW, 7.5kW and 10kW total device heat dissipation,
- Temperatures 55C to 150C
- Approved for LM-80 usage (auditable)
- Coordination with LM-80 Drive Electronics protect devices

### LM-80 Temperature Monitoring



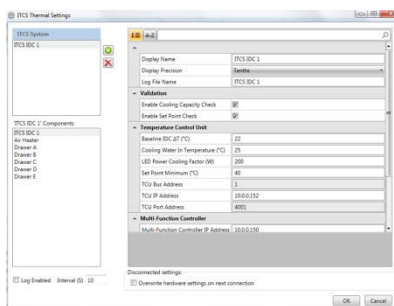
- Monitor Tsink to ensure temperature uniformity
- Monitor Tair: user positional probes
- Monitor Tcase: high accuracy thermocouples
- Monitor Tcase: RTD
- Monitor Tcase: NTC

### ITCS Fixturing



- Vektrex ITCS Fixturing
- 40 test locations (75 x 150mm)
- n+1 load board architecture; unique ID for each device
- Reconfigure to support larger devices (150x150mm)
- Reconfigure to support modules (300x150mm)
- Slide out drawers: easy load and unload
- Includes LM-80 Temperature Monitoring
- Optional LM-80 IDC Tuning System

### LM-80 ITCS IDC Tuning System



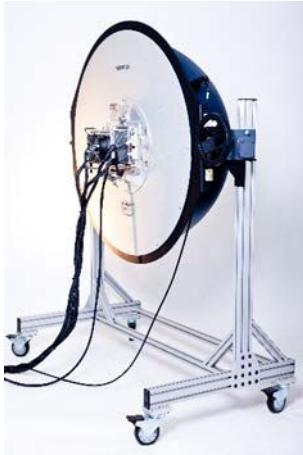
- Optional upgrade for LM-80 system
- Individual drawer tuning – adjust temperature up and down
- Ideal for chambers with a product mix (high/mid/low power)
- Includes hardware upgrade



## LM-80 Integrated Solutions

Reliable, Energy Efficient, High Capacity  
Applications: LM-79, LM-80-08, LM-80-15

### LM-80 Automated Light Measurement System – ALMS



- Automated light measurement supporting LM-80/LM-79
- Accurately test 80 devices in 10 minutes
- Repeatable, accurate light measurements enable rapid detection of trends
- Luminous flux repeatability: 0.05%
- High voltage and high current capability
- LM-85 pulsed mode light measurements
- Integrates CAS-140 and SpecWinPro
- ISD audit trail included

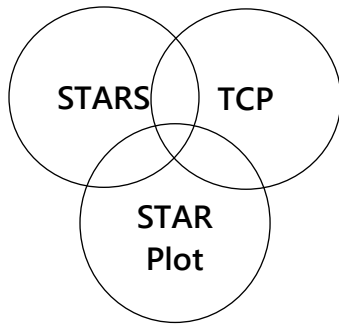
### LM-80 Software (LEDBench)



- LEDBench is delivered with the LM-79/LM-80 ALMS
- LM-85/Single Pulse Mode to reduce junction temperature and improve light measurements
- Measure 1 to 80 devices on n+1 load board

## LM-80 Software Applications

### LM-80 Integrated Software Solution

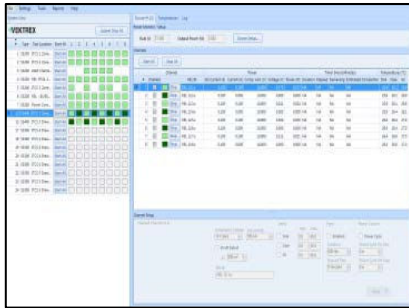


- Integrated and coordinated software applications to simplify LM-80 test
- Data logging
- Monitoring
- Safety mechanisms
- Current source control
- Chamber control



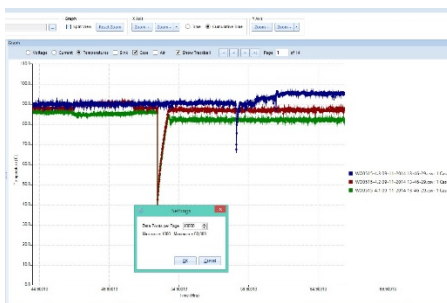
## LM-80 Software Applications

### LM-80 Software (STARS)



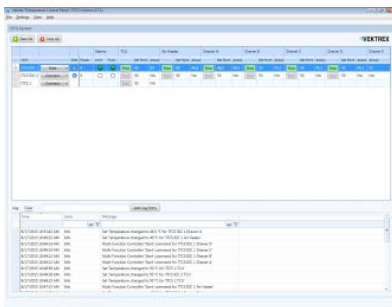
- STARS - SpikeSafe Test and Reliability System Software Application
- Manage up to 256 independent source channels
- Approved for LM-80 test (auditable)
- Monitoring/data logging: current, voltage, Tsink, Tair, Tcase
- Duration timers automatically stop tests at the correct time
- Software timing uncertainty report consistent with LM-80 standard
- Use with any SpikeSafe Series current source
- Failsafe shutdown preserves devices from catastrophic failure
- Automatic restarts when failure detected
- Management overview functions simplify test processes

### LM-80 Software (STARPLOT)



- STARPLOT Software Application
- Graphically view STARS data log files to easily spot trends
- Overlay multiple tests
- Zoom on anomalies
- Graph by temperature, current, or voltage

### LM-80 Software Application (TCP)



- LM-80 Software Temperature Control Panel (TCP)
- Thermal Control integrates with STARS, providing integrated safety system: shut down power and cooling/chamber at failure
- Remote control and monitoring for ITCS liquid-cooled chambers
- Remote control and monitoring of temperature control unit
- Temperature monitoring: Tsink, Tair, Tcase
- Failsafe temperature shutdown preserves devices

## LM-80 Accessories

### Thermocouple (Tcase G2)



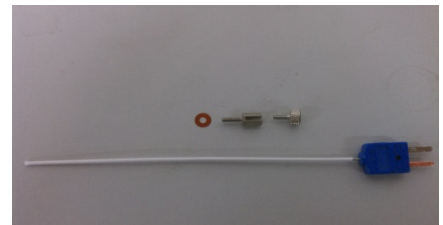
- High accuracy thermocouples meet LM-80 specifications
- User positional: use ITCS fixturing to attach probe to Tcase point
- No soldering required
- Ceramic – long time use with no outgassing

### Thermocouple (Tcase Thin Wire)



- Useful for COB
- Thinwire thermocouple: high accuracy
- Attach to Tcase position using Kapton tape or solder

### Thermocouple (Tair G1)



- User positional Tair probe
- Shielded to avoid stray LED light
- Use ITCS fixturing to attach probe at the correct place for Tair
- Use one for entire chamber
- Use multiple Tair probes to monitor Tair at several locations

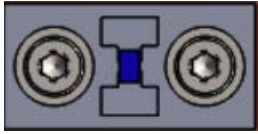
### Thermocouple Isolator Pod



- 500V electrical isolation
- Passive design: no circuitry
- Attach with solder or epoxy
- Excellent thermal conductivity
- LED-safe materials
- Improves thermocouple measurement accuracy

## LM-80 Accessories

### RTD Ring Lug



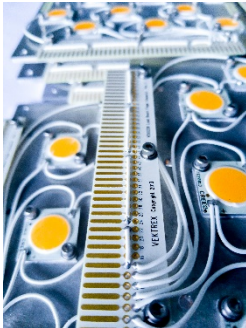
- Provides isolation from load plate/load board
- Eliminate heating effects during mounting
- Simply attach wires to the connector or load board
- Reusable
- Includes RTD

### Cable Extension



- SpikeSafe current sources drive current accurately to 15m
- Extension cables available in 3m, 6m, and 12m lengths
- PVC
- Connect between SpikeSafe current source and ITCS junction or your device

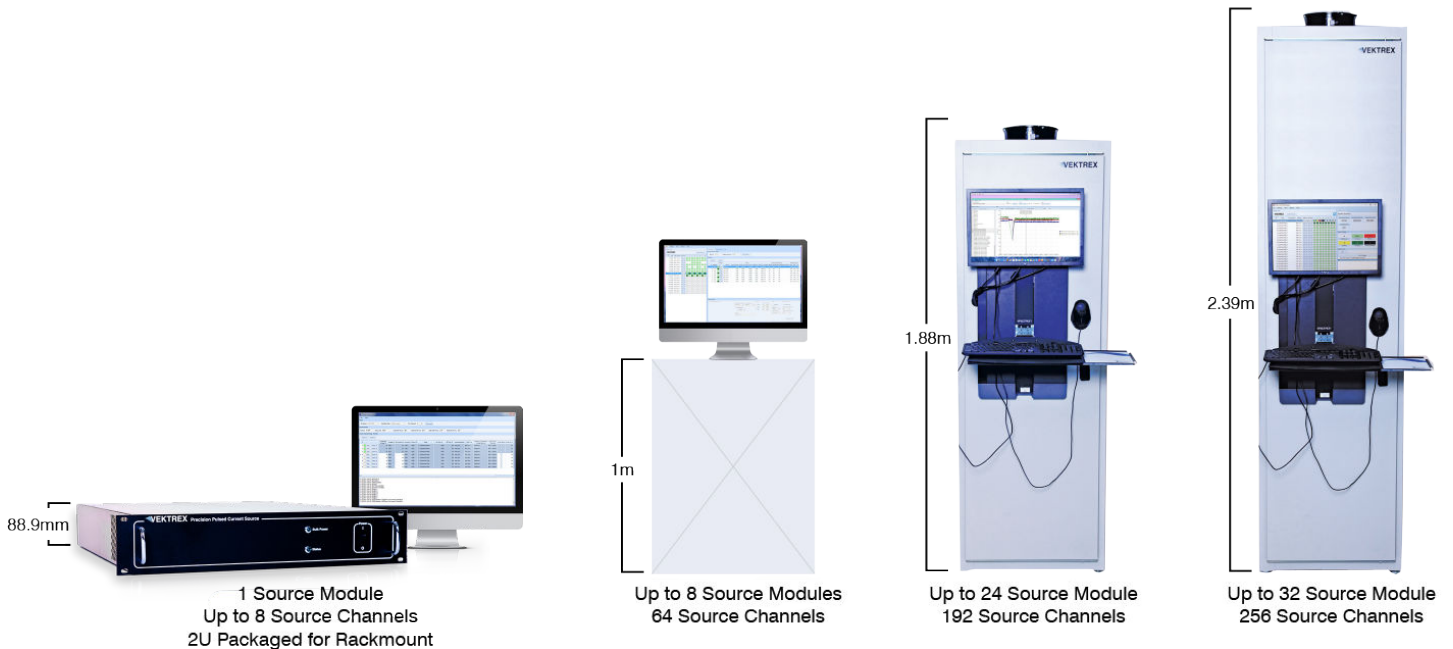
### N+1 Load Board



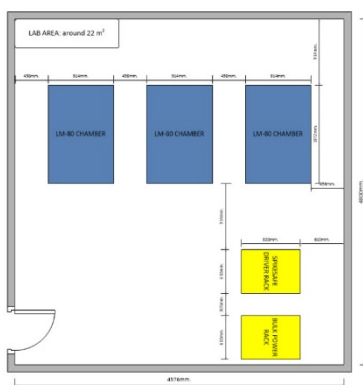
- N+1 load board architecture
- Drive devices in series
- Drive devices individually for light measurement
- Design guidelines available
- Use only best materials to reduce thermal resistance
- Design service available



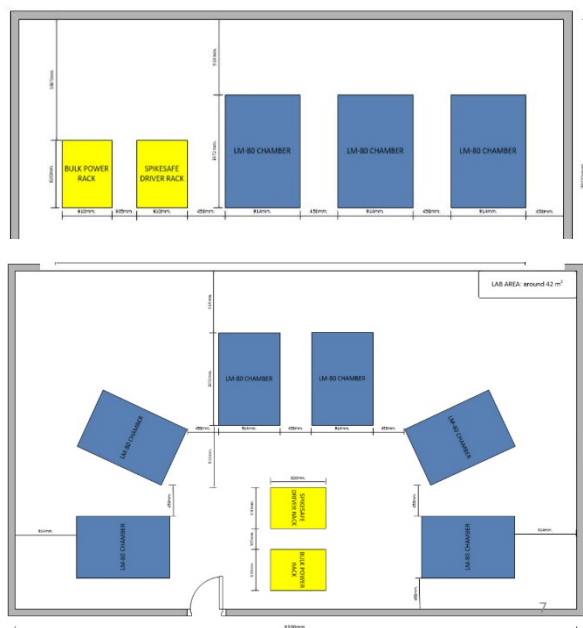
## Vektrex System Configurations



- Scalable, modular design enables easy system expansion for increased capacity
- Solutions available for any size lab
- Sample lab layouts include:
  - Starter System – one source module connected to your fixturing
  - One to one layout – system next to your chamber or test setup
  - Line layout – one system connected to several chambers or test setups in a row
  - Star layout – one central command system connected to many chambers in the lab



From leftmost image,  
moving clockwise:  
L-Shape Layout, In-Line  
Layout, Star Layout



## Reliability Solutions

Reliable, Energy Efficient, High Capacity  
Applications: LM-80; LM-79; Reliability Test, Burn-In  
LED, Laser Diode, VCSEL, Module

### Reliability Drive Electronics



- Accurate, reliable drive current for 7/24 operation
- Use with any SpikeSafe Series current source
- DC and DC / Continuous Pulse modes available
- SpikeSafe load protection preserves devices and improves reliability statistics
- Individual control of source channels (current, voltage, duty cycle)

### Reliability Drive Electronics



- Portable, roll-around small driver rack
- Use with any SpikeSafe current source
- Maximum 8 modules ( 64 source channels)
- Control all current sources from one centralized location
- Multiple system sizes to meet the needs of any lab
- Small size driver rack shown: 1m tall
- Integrated bulk power to 5kW possible

### Reliability Drive Electronics

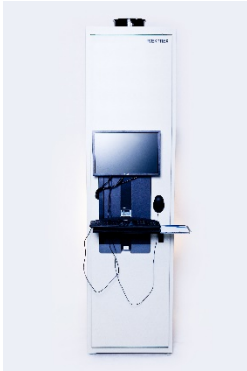


- Drive electronics for low to high capacity / R&D
- Configure with any SpikeSafe current source
- May be used for pre-LM-80 validation
- Modular and scalable architecture
- Maximum 16 modules, 128 source channels
- Energy efficient
- Integrated bulk power to 10kW possible
- Medium size driver rack shown: 1.88m tall

## Reliability Solutions

Reliable, Energy Efficient, High Capacity  
Applications: LM-80; LM-79; Reliability Test, Burn-In  
LED, Laser Diode, VCSEL, Module

### Reliability Drive Electronics



- High-capacity, large drive electronics cabinet shown: 2.39m tall
- Maximum capacity 32 modules (256 source channels)
- Use to control your lab from one centralized location, reducing labor costs
- Highest power density available – 256kW
- Any SpikeSafe current source module may be used
- Energy efficiency reduces ROI
- Use with STARS software or develop your own

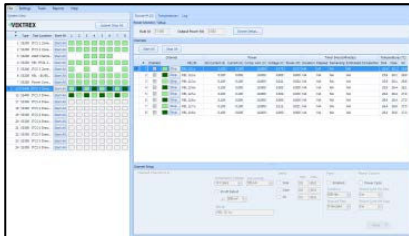
### Integrated Thermal Control System (ITCS)



- Integrated Thermal Control System (ITCS)
- High capacity integrated chamber
- Active liquid cooling: uses plant water
- 10kW total heat dissipation
- Temperatures: to 150C
- Applications: burn-in, RTOL Test
- Coordination with SpikeSafe Drive Electronics protect devices
- See Software section for Vektrex software applications
- Temperature monitoring optional

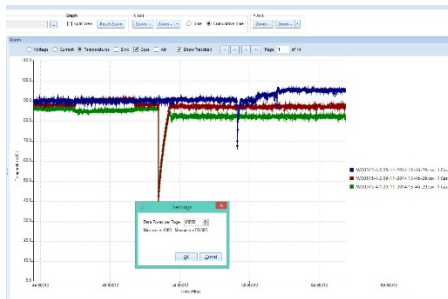
## Reliability Software and Applications

### SpikeSafe Test and Reliability System



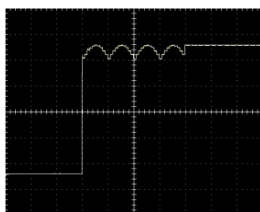
- STARS software application manages up to 256 source channels
- Each source channel individually programmable / controllable
- Data output in .csv format for easy import and analysis
- Duration timers automatically stop tests at the correct time
- Use with any SpikeSafe Series current source

### STARPLOT



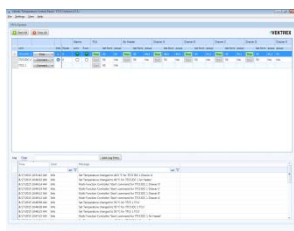
- STARPLOT Software Application
- Graphically presents STARS output data
- Easily spot trends using STARPLOT graphical test data viewer

### SpikeSafe Modulated Current



- SpikeSafe modulated current function
- Adds arbitrary waveform capability to any SpikeSafe DCP current source
- Allows user to download customized waveforms for execution (for example red eye flash test)
- User-defined, text-based sequence downloaded for execution once or for infinity
- To 33MHz

### Temperature Control Panel - TCP



- Thermal Control Panel (TCP) Software Application
- TCP combines with STARS providing integrated safety system – shut down power and cooling/chamber at failure
- Remote control and monitoring for liquid cooled integrated systems
- For use with the Integrated Thermal Control System
- For use with LN2-based installations



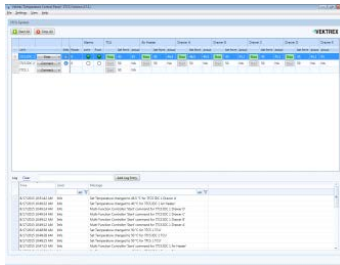
## Reliability Accessories

### Cable Extension



- SpikeSafe current guaranteed to the ends of long cables (15m)
- Cable extensions may be combined
- Available in lengths 3m, 6m, 12m

### Failsafe Temperature Monitoring



- Hardware and software combine to protect your devices
- Set maximum temperature for thermocouple or RTD
- If temperature exceeded, then SpikeSafe modules are shutdown
- Also available in standalone mode

### Bulk Power Cabinet



- Bulk Power Cabinet
- Centralize bulk power distribution
- Maximum 80kW
- Emergency off
- Three phase AC power; 240VAC, 380VAC, and 440VAC

## Light Measurement Solutions

Applications: R&D, Characterization, Production

### SpikeSafe Precision Pulsed Current Sources Performance Series

#### Single Channel



- Precision timing for reduced junction temperature and improved LED light measurements
- Continuous power conversion for sustained output power
- DC, Continuous Pulse, Single Pulse, Dynamic modes
- Max current: 500mA-60A
- Max voltage: 50-400V
- Pulse rise/fall time:  $<2\mu\text{s}$
- Pulse width range:  $10\mu\text{s}$  – 15000s
- Bias and Modulated Current modes available
- Low jitter trigger
- Approved for LM-80 measurements

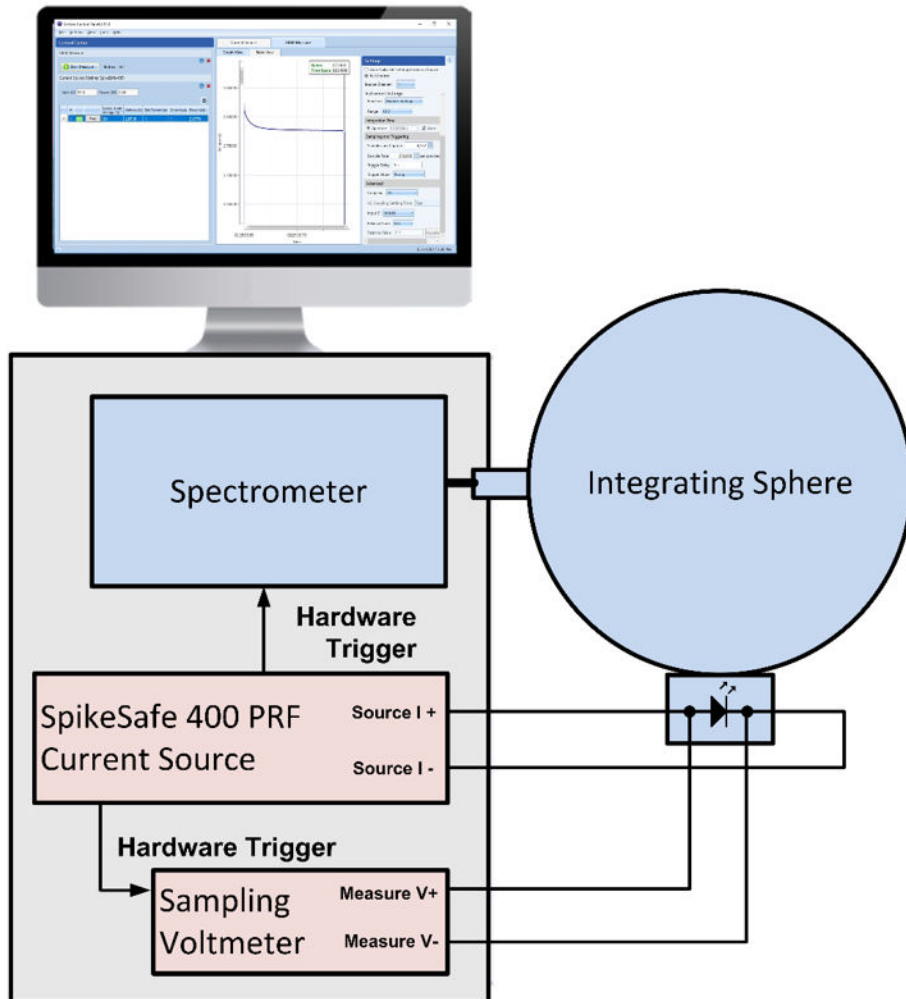
### SpikeSafe Precision Pulsed Current Sources Performance Series

#### Multi-Channel



- Max current: 500mA-60A
- Max voltage: 50-400V
- Source channels: 2-8; independent control
- Pulse synchronization across channels
- Continuous power conversion for sustained output power
- Precision timing for reduced junction temperature and improved LED light measurements
- Pulse rise/fall time:  $<2\mu\text{s}$
- Pulse width range:  $10\mu\text{s}$  – 10s or longer with MODI upgrade
- DC, Continuous Pulse, Single Pulse, Dynamic modes
- Bias and Modulated Current modes available
- Refer to [vektrex.com](http://vektrex.com) for more information

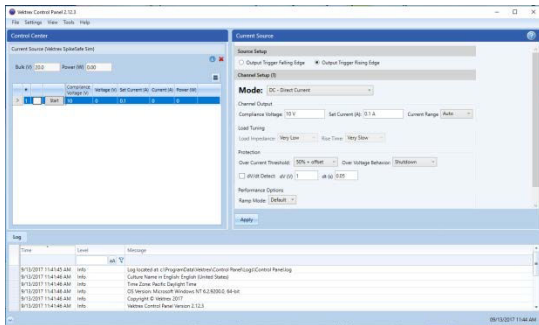
## Combine a Performance Current Source with Sampling Voltmeter for a Complete Source/Measure Capability



## Light Measurement Solutions

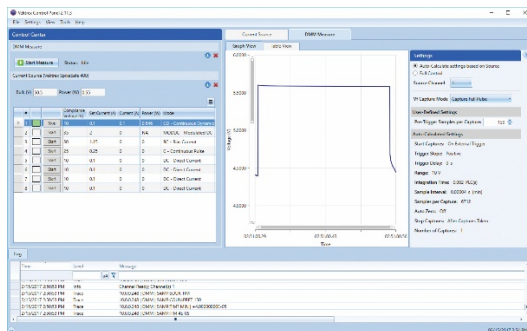
Reliable, Repeatable, Reproducible Light Measurements  
Software Applications: Control Panel, Vf, Light Measurement,  
Software Development Toolkit, Modulated Current  
Applications: R&D, Characterization, Production

### Control Panel



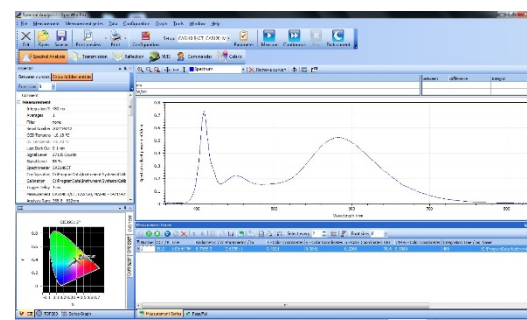
- Control Panel Software Application
- Provides access to all SpikeSafe functions “out of the box”
- Controls one (1) SpikeSafe module
- Source channels individually controllable
- For use with all SpikeSafe Series current source products
- SCPI output feature simplifies software development

### Control Panel + Vf



- Adds Vf monitoring to the Control Panel Software Application
- Includes data logging and editing feature
- Integrates with high speed, accurate sampling voltmeter
- Capture and view Vf across entire pulse or log one value
- Easy to use

### Control Panel + Light Measurement



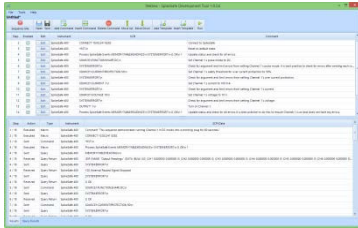
- Adds light measurement to Control Panel + Vf and data logging
- Coordinate light measurement with SpikeSafe pulses
- Synchronize your light measurement with Vf measurement
- Ideal for R&D, production, and software development use
- Available as a turnkey system or for use in developing your own system



## Light Measurement Solutions

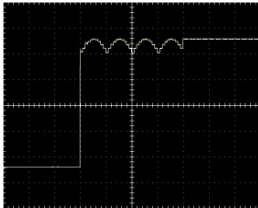
Reliable, Repeatable, Reproducible Light Measurements  
 Software Applications: Control Panel, Vf, Light Measurement,  
 Software Development Toolkit, Modulated Current  
 Applications: R&D, Characterization, Production

### SpikeSafe Software Development Toolkit



- SpikeSafe Software Development Toolkit Software Application
- Speeds development of SpikeSafe 400 based applications
- Capture SCPI sequences and test/validate prior to insertion into application
- For use with all SpikeSafe 400 Series current source products

### SpikeSafe Modulated Current



- SpikeSafe modulated current function
- Adds arbitrary waveform capability to any SpikeSafe PRF current source
- Allows user to download customized waveforms for execution (for example red eye flash test)
- User-defined, text-based sequence downloaded for execution once or for infinity
- To 33MHz

## Thermal Measurement Solutions

Applications: Junction Temperature, Thermal Resistance, Permissible Pulse Handling Graphs, Thermal Modelling

### Performance Series Current Source + Bias Module



- Integrates low current /bias current source
- Hardware integration supports fast transitions required for thermal measurements
- Use for Tj and Rth testing as well as thermal modelling
- Develop your own thermal measurement system and generate permissible pulse handling graphs
- Transient thermal measurements
- Available as turnkey system or for use in developing your own system

### Automated Thermal Resistance Test System



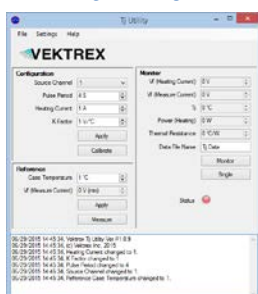
- Automates Rth measurements and calculations
- Saves time by detecting failures and stability early in the testing process
- Customizable load board/device test configurations
- Simple user interface
- Logs data for analysis
- Rapidly measures 1-80 devices identifying device failures

### Aurotek JD-2020 LED Thermal Resistance Analyzer



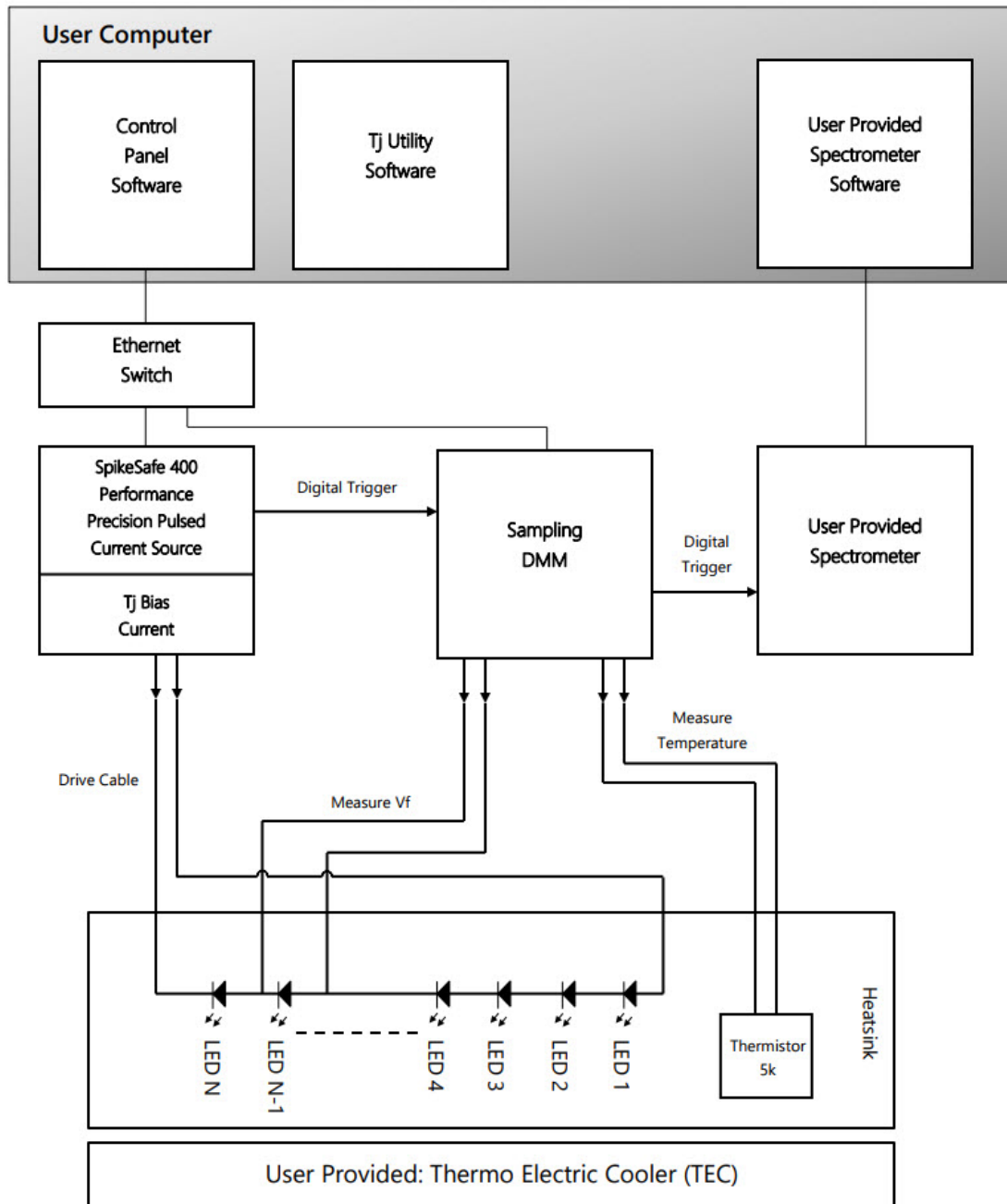
- SpikeSafe Performance Series Current Sources with the Bias Module provide the foundation for Aurotek's Thermal Resistance Analysis System
- Performance Series Current Sources provide highly accurate current
- The Bias Module enables fast transitions from high current to low current

### Tj Utility



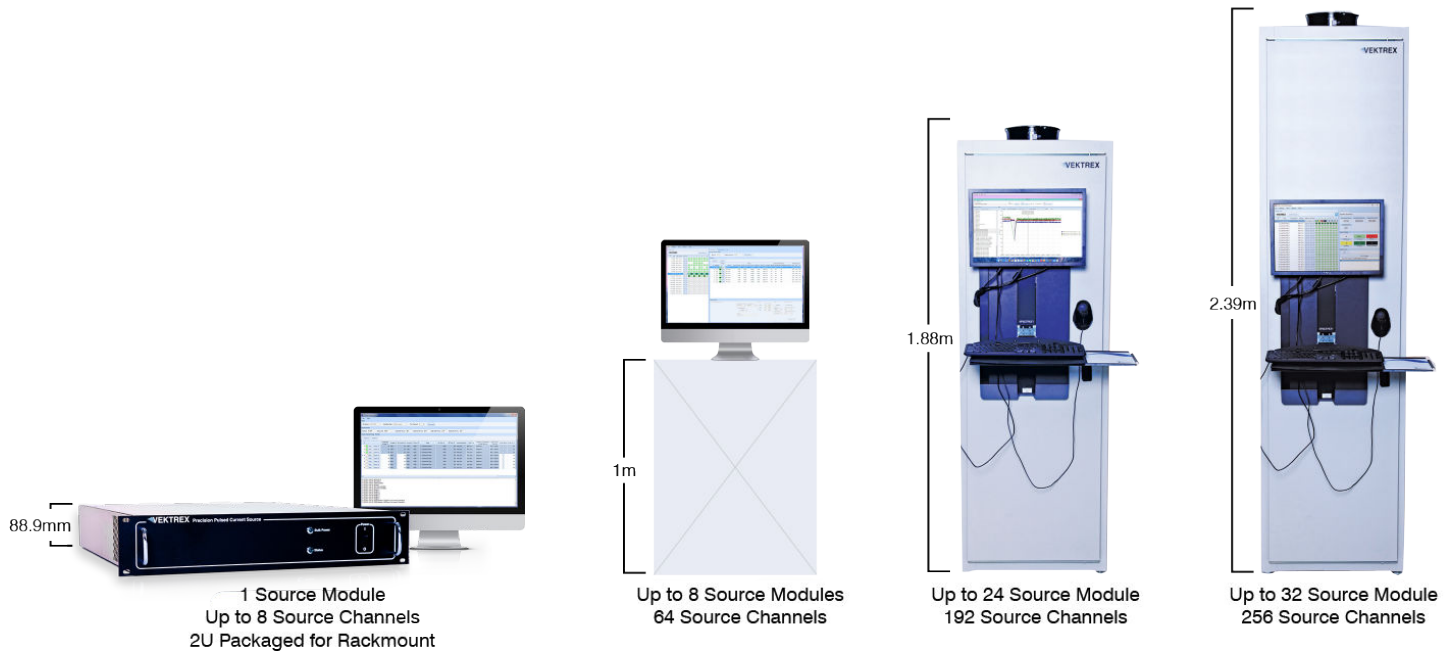
- Easy to use turnkey solution
- Automates various Tj measurement steps defined in JEDEC JESD51-1 and JESD51-51
- Tj and Rth measurements
- Easy-to-use software interface
- For one device at a time and luminaires

## Tj Utility Block Diagram



# SpikeSafe DC / DCP Current Sources:

## Form Factor



- Max current: to 60A
- Max compliance voltage: to 400V
- Single and multiple independent source channels
- One module appropriate for low, mid, and high power devices
- Sustained output power to 3kW
- Pulse synchronization across source channels
- See software section for Vektrex software applications



# SpikeSafe DC Current Source

## Selector Guide

Max Current (A)	Max Compliance Voltage					Source Channels	Max Power (W)	
	50V	100V	200V	300V	400V		Per Channel	Total
0.5	✓	✓	✓	✓	✓	1, 2, 4, 8	200	1600
1	✓	✓	✓	✓	✓	1, 2, 4, 8	400	3200
2	✓	✓	✓	✓	✓	1, 2, 4, 8	800	6400
3	✓	✓	✓	✓	✓	1, 2, 4, 8	1000	8000
4	✓	✓	✓	✓	✓	1, 2, 4, 8	1000	8000
5	✓	✓	✓			1, 2, 4, 8	1000	8000
7.5	✓					1, 2, 4, 8	375	3000
10	✓	✓	✓			1, 2, 4	1600	6400
12.5	✓	✓				1, 2, 4	1250	5000
15	✓					1, 2, 4	750	3000
20	✓	✓	✓			1, 2	3200	6400
25	✓	✓				1, 2	2500	5000
30	✓					1, 2	1500	3000
40	✓	✓	✓			1	6400	6400
50	✓	✓				1	5000	5000
60	✓					1	3000	3000
0.1				✓		32	30	960
0.2	✓					32	10	320

## SpikeSafe DC / Continuous Pulse Current Sources

DC and Continuous Pulsed Modes

High Power Density, 10µs Minimum Pulse Width

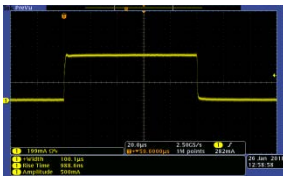
SpikeSafe Load Protection Preserves Devices

Devices: LED, Laser Diode, VCSEL, COB, Emitter, Array, Luminaire

Applications: LM-80, Reliability, Burn-in, HASS, PTMCL, Stress Test

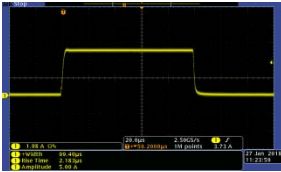
See more information at [www.vektrex.com](http://www.vektrex.com)

### SpikeSafe Low Power DCP Current Source



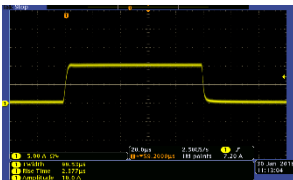
- Max current: 1mA to 500mA
- Max compliance voltage: to 400V
- Single and multiple independent source channels
- Sustained output power to 200W per source
- One module appropriate for low power devices
- See software section for Vektrex software applications

### SpikeSafe 200V / 5A Power DCP Current Source



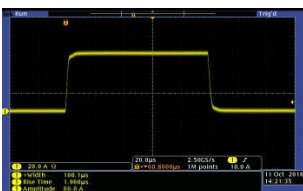
- Max current: 5A
- Max compliance voltage: to 200V
- Sustained output power to 1kW per source
- Single and multiple independent source channels
- See software section for Vektrex software applications

### SpikeSafe Mid Power DCP Current Source



- Max current: to 10A
- Max voltage: to 400V
- Sustained output power to 1600W per source
- Single and multiple independent source channels
- One module appropriate for low and mid power devices
- See software section for Vektrex software applications

### SpikeSafe High Power DCP Current Source



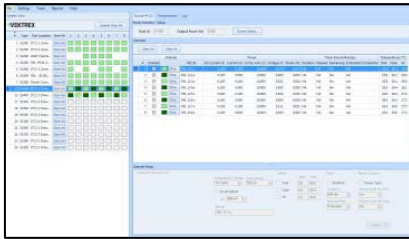
- Max current: to 60A
- Max voltage: to 200V
- Single and multiple independent source channels
- One module appropriate for low, and mid power devices
- See software section for Vektrex software applications

# SpikeSafe DC / Continuous Pulse Current Source Selector Guide

Max Current (A)	Max Compliance Voltage					Source Channels	Max Power (W)		Min Pulse Width
	50V	100V	200V	300V	400V		Per Channel	Total	
0.5	✓	✓	✓	✓	✓	1, 2, 4, 8	200	1600	10μs
2	✓	✓	✓	✓	✓	1, 2, 4, 8	800	6400	10μs
3	✓	✓	✓	✓	✓	1, 2, 4, 8	1000	8000	10μs
4	✓	✓	✓	✓	✓	1, 2, 4, 8	1000	8000	10μs
5	✓	✓	✓			1, 2, 4, 8	1000	8000	10μs
8	✓	✓	✓			1, 2, 4	1600	6400	10μs
10	✓	✓	✓			1, 2, 4	1600	6400	10μs
16	✓	✓	✓			1, 2	3200	6400	10μs
20	✓	✓	✓			1, 2	3200	6400	10μs
32	✓	✓	✓			1	6400	6400	10μs
40	✓	✓	✓			1	6400	6400	10μs
60	✓					1	3000	3000	10μs

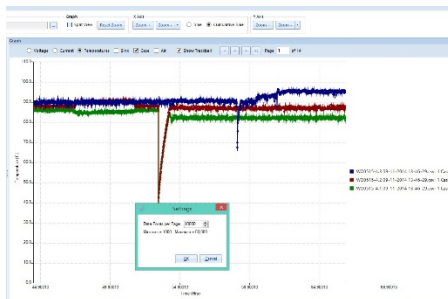
## DC and DC / Continuous Pulse Software Applications

### SpikeSafe Test and Reliability System



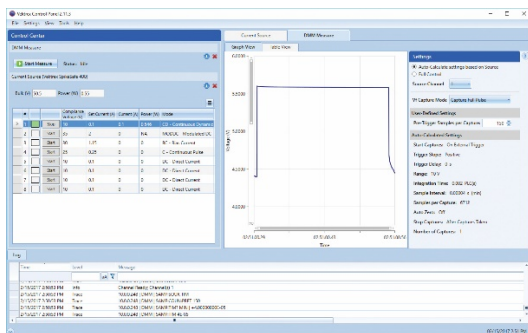
- STARS Software Application manages up to 256 source channels
- Each source channel individually programmable / controllable
- Approved for LM-80 and reliability test
- Temperature, current, and voltage monitoring and data logging
- Thermocouple, RTD, and NTC temperature monitoring
- Failsafe shutdown preserves device from catastrophic failure
- Data output in .csv format for easy import and analysis
- Duration timers automatically stop tests at the correct time
- Software timing uncertainty consistent with LM-80 standard
- Use with any SpikeSafe Series current source

### STARPLOT



- STARPLOT Software Application
- Graphically presents STARS output data
- Easily spot trends using STARPLOT graphical test data viewer
- May be installed at test station or used from remote location

### Control Panel



- Control Panel Software Application
- Provides access to all SpikeSafe functions "out of the box"
- Controls one (1) SpikeSafe module
- Source channels individually controllable
- For use with all SpikeSafe Series current source products

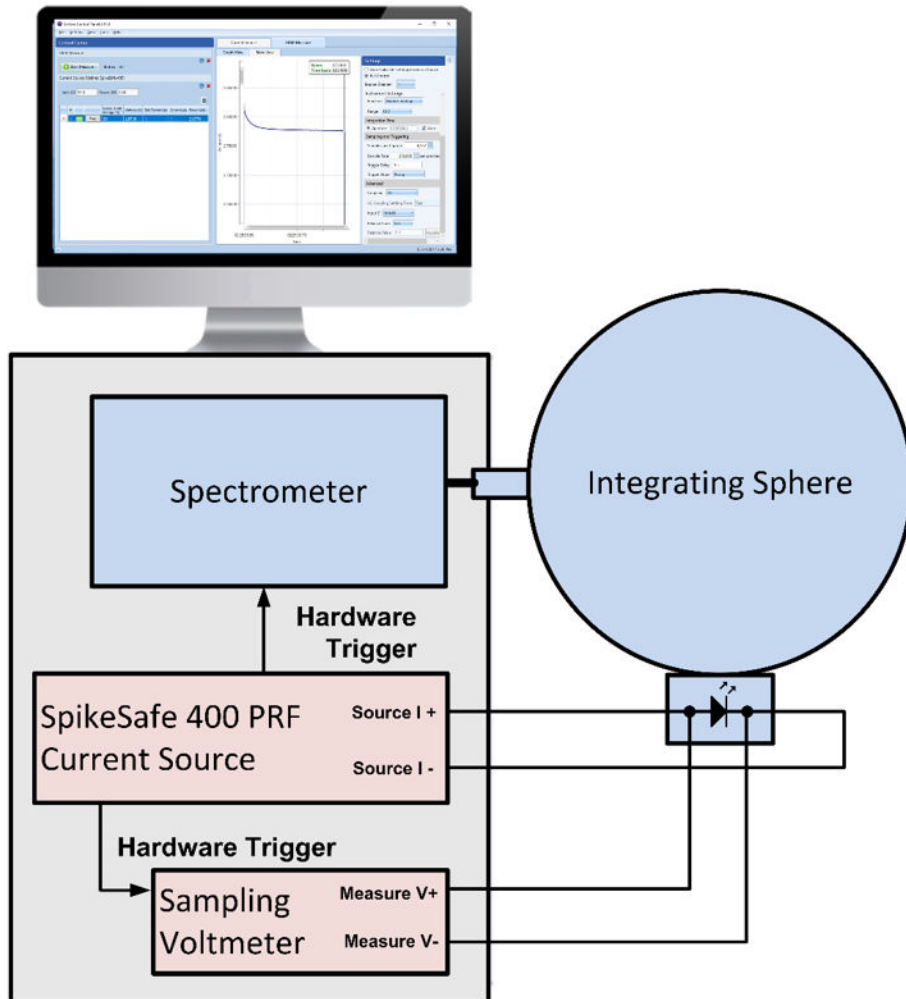


## Performance Series Form Factor



- Award-winning Performance Series Current Sources – 2017 Sapphire Award in the Tools & Tests in SSL Design category

## Combine a Performance Current Source with Sampling Voltmeter for a Complete Source/Measure Capability



# SpikeSafe Performance Series Single Channel Current Source Selector Guide

Max Current (A)	Max Compliance Voltage					Max Power (W)	Min Pulse Width
	50V	100V	200V	300V	400V		
0.5	✓	✓	✓	✓	✓	200	10μs
2	✓	✓	✓	✓	✓	800	10μs
3	✓	✓	✓	✓	✓	1000	10μs
4	✓	✓	✓	✓	✓	1000	10μs
5	✓	✓	✓			1000	10μs
8	✓	✓	✓			1600	10μs
10	✓	✓	✓			1600	10μs
16	✓	✓	✓			3200	10μs
20	✓	✓	✓			3200	10μs
32	✓	✓	✓			6400	10μs
40	✓	✓	✓			6400	10μs
60	✓					3000	10μs

# SpikeSafe Performance Series Multiple Channel Current Source Selector Guide

Max Current (A)	Max Compliance Voltage					Source Channels	Max Power (W)		Min Pulse Width
	50V	100V	200V	300V	400V		Per Channel	Total	
0.5	✓	✓	✓	✓	✓	1, 2, 4, 8	200	1600	10μs
2	✓	✓	✓	✓	✓	1, 2, 4, 8	800	6400	10μs
3	✓	✓	✓	✓	✓	1, 2, 4, 8	1000	8000	10μs
4	✓	✓	✓	✓	✓	1, 2, 4, 8	1000	8000	10μs
5	✓	✓	✓			1, 2, 4, 8	1000	8000	10μs
8	✓	✓	✓			1, 2, 4	1600	6400	10μs
10	✓	✓	✓			1, 2, 4	1600	6400	10μs
16	✓	✓	✓			1, 2	3200	6400	10μs
20	✓	✓	✓			1, 2	3200	6400	10μs

## Performance Series Current Sources

Applications: LED/Laser Light Measurement, Device Characterization,  
Quantum Efficiency Testing, Wafer Probing,  
Junction Temperature Measurements, Thermal Modeling,  
Production Binning, High Power Pulse Withstand Test

### SpikeSafe Precision Pulsed Current Sources Performance Series

#### Single Channel



- Max current: 500mA-60A
- Max voltage: 50-400V
- Continuous power conversion for sustained output power
- Precision timing for reduced junction temperature and improved LED light measurements
- Pulse rise/fall time:  $<2\mu\text{s}$
- Pulse width range:  $10\mu\text{s}$  – 10s or longer with MODI upgrade
- DC, Continuous Pulse, Single Pulse, Dynamic modes
- Bias and Modulated Current modes available
- Refer to [vektrex.com](http://vektrex.com) for more information

### SpikeSafe Precision Pulsed Current Sources Performance Series

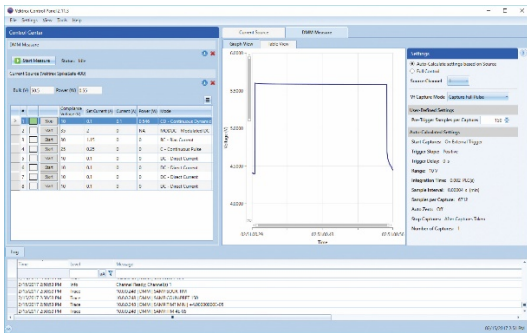
#### Multi-Channel



- Max current: 500mA-60A
- Max voltage: 50-400V
- Source channels: 2-8; independent control
- Pulse synchronization across channels
- Continuous power conversion for sustained output power
- Precision timing for reduced junction temperature and improved LED light measurements
- Pulse rise/fall time:  $<2\mu\text{s}$
- Pulse width range:  $10\mu\text{s}$  – 10s or longer with MODI upgrade
- DC, Continuous Pulse, Single Pulse, Dynamic modes
- Bias and Modulated Current modes available
- Refer to [vektrex.com](http://vektrex.com) for more information

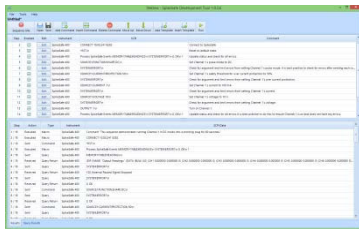
## Performance Series Software Applications

### Control Panel



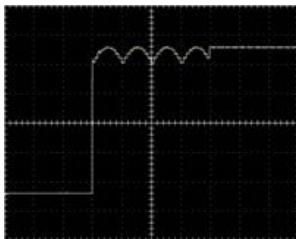
- Control Panel Software Application
- Provides access to all SpikeSafe functions “out of the box”
- Controls one (1) SpikeSafe module
- Source channels individually controllable
- For use with all SpikeSafe Series current source products

### SpikeSafe Software Development Toolkit



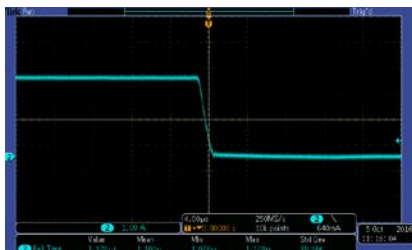
- SpikeSafe Software Development Toolkit Software Application
- Speeds development of SpikeSafe 400 based applications
- Capture SCPI sequences and test/validate prior to insertion into application
- For use with all SpikeSafe 400 Series current source products

### SpikeSafe Modulated Current (MODI)



- Adds the capability to define and execute arbitrary DC waveforms
- 1ms current step resolution
- Steps defined as a percentage of setpoint current
- Useful to simulate rectifier ripple, camera flash, etc.

### SpikeSafe with Bias Module



- Adds a low current bias module to provide thermal analysis measurement current
- Useful for T<sub>j</sub>, R<sub>θ</sub> testing and thermal modelling