

High-performance LED test solutions.



VEKTREX

# INTEGRATED THERMAL CONTROL SYSTEM

Turn-key, high-capacity chamber with conductive cooling for packaged devices:  
LED, COB, VCSEL, low, mid and high power devices

# COMPACT, ENERGY-EFFICIENT LIQUID COOLING AND CONTROL

The Vektrex Integrated Thermal Control System (ITCS) uses proprietary water-based thermal control to maintain consistent LED and laser device temperatures during high power testing applications.

Temperature uniformity is essential to successful high power device testing. The Vektrex Integrated Thermal Control System (ITCS) circulates water at a precise temperature in a closed-loop system for uniform thermal control in a compact footprint. With up to 10kW of power handling capability – at operating temperatures up to 150C – the ITCS chamber provides the flexibility to test numerous high power device types in a single chamber and maintain temperature uniformity within 2C. The ITCS can be purchased as a stand-alone product or with additional Vektrex components.

## ITCS COMPONENTS:



Test Software



Drive Electronics



Temperature Monitoring



Load Boards and Fixturing Options



Training & Consulting

## Flexible versatility

Vektrex ITCS chambers are designed to safely contain optical energy and control temperature at very high power levels. The compact and flexible design supports a wide range of elevated temperature testing applications. Available standard load plates simplify device mounting and shorten test setup time.

## Comprehensive data logging

Build-in data acquisition electronics and wiring support all major temperature sensors including RTD, thermocouple, and NTCs. Sensors may be designed into load boards or attached to samples in other ways. Sensors may be associated with any drive channel to support thermal safety limits. Sample rates are programmable and sample data is automatically transferred to the optional STARS software application for logging. Timing accuracy, wire types and other parameters meet stringent LM-80 specifications.

## Contaminant-free construction

LEDs and other optoelectronic devices are easily degraded by atmospheric contaminants during long-term tests. The ITCS is constructed with the highest quality industry-approved materials with low outgassing properties to ensure no contaminants are released.

Each ITCS undergoes a proprietary cleaning and aging process prior to delivery. During operation, a passive airflow design continuously exhausts chamber air to expel contaminants that may be released from DUTs and load boards. The ultra-clean ITCS interior ensures DUTs are not harmed during long-term tests.

## Individual Drawer Control

Individual Drawer Control provides temperature fine-tuning to adjust for differences in the case temperature rise that occurs when testing devices with different thermal characteristics. Operating each drawer at a different temperature enables low, mid, and high power device testing in one ITCS.

## Field-proven software

Vektrex field-proven software applications control the ITCS during testing and can be configured to support a wide range of testing needs. STARS software provides current source control and ITCS chamber location-specific monitoring of source channels, loads, and temperatures during testing. STARS also provides seamless data logging and lab management functions that allow you to define and track devices through the entire testing process and seamless data logging. Temperature Control Panel supervises the ITCS/and or third-party thermal control systems, ensuring temperature is maintained within programmed limits. From monitoring to failsafe protection, Vektrex software simplifies test control and ensures accurate data collection.

## Confidence

Whether you're expanding existing test capacity, or stepping up to higher-power devices, Vektrex ITCS chambers offer a scalable and efficient modular solution. Leading manufacturers and test labs worldwide rely on Vektrex systems and components for unmatched power, capacity and reliable performance.

Learn more about Vektrex ITCS chambers at [vektrex.com](http://vektrex.com)

# SPEED TIME TO MARKET WITH PROVEN PERFORMANCE

Leading companies worldwide rely on Vektrex for complete turn-key systems and solutions.

High-capacity with unparalleled temperature uniformity

LED/VCSEL manufacturers and third-party test facilities standardize on ITCS chambers for their testing needs

Up to 150C max temperature and 10kW max capacity

Vektrex ITCS chambers support a variety of devices and applications:

Devices	Applications
LED	LM-80
IR	Pre LM-80
UV	R&D
VIS	Reliability
COB	Life Test
Array	Burn-in
Modules	Automotive
Laser Diode	EU
VCSEL	RTOL
	HTOL



Safety interlocks protect operators from light exposure when the chamber door is open and restart active tests when the door is closed

View port features multiple reflective/absorptive glass layers that attenuate IR, UV, and visible light to safe levels

High-capacity slide-out drawers simplify loading and unloading

Failsafe temperature monitoring immediately shuts down power if temperatures exceed user-defined minimum and maximum limits to prevent device damage

An efficient, integrated Temperature Control Unit transfers heat to facility water

Vektrex ITCS chambers meet LM-80 requirements.

## GENERAL

<b>Dimensions</b>	0.91m W x 1.37m D x 1.88m H
<b>Available Input Power Options</b>	3P 208V, 240V, 380V, 415V, 440V
<b>Available Max Temperature Options</b>	90C, 120C, 150C
<b>Available Load Power Options</b>	5kW, 7.5kW, 10kW
<b>Load Mounting Area</b>	4,500 cm <sup>2</sup>
<b>Mounting Configuration</b>	10 150 x 300mm thermal platforms
<b>Max Load Power per Thermal Platform</b>	1kW, based upon selected model load power
<b>Test Locations</b>	Flexible, up to 40 75x150mm
<b>Test Location Load Power</b>	1000W, 500W, or 250W max, depending on configuration
<b>Test Location Use</b>	Flexible; based upon load type. MCPCB, FR4, COB load plate, burn-in plates, custom clamps/fixturing
<b>Max Weight</b>	680.4 kg

## CONFIGURATION

<b>Cooling Technology</b>	Closed loop active temperature control provides heating and cooling
<b>Temperature Control Method</b>	Pressurized circulating water. Options available to support RO/DI water
<b>Fixture Configuration</b>	5 slide out drawers
<b>Air Circulation</b>	Forced convection, adjustable fan with on/off switch
<b>Air Exhaust</b>	Dual adjustable side vents
<b>Optical Light Traps</b>	Water cooled; prevent stray light and thermal stratification

## TEMPERATURE CONTROL

<b>Available Temperature Control Options</b>	Single-stage TCU Dual-stage TCU + Individual Drawer Control*
<b>Temperature Range</b>	Facility water + 15C to max temperature of model
<b>Accuracy</b>	+/-0.7C typical at 85C
<b>Stability</b>	0.2C peak variation at 85C, 0.65C peak variation at 120C
<b>Individual Drawer Control*</b>	Fine-tunes/shifts drawer temperature Max temperature shift subject to limitations. Total shift across ITCS: °C ≤ 15 + Total Load Power (W)/200W
<b>Air Heating Capacity</b>	1500W

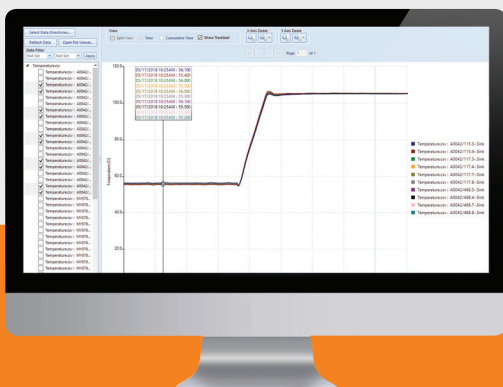
## TEMPERATURE MONITORING\*

<b>Supported Sensors</b>	Integrated thermocouple wiring is T-type
<b>Monitoring Locations</b>	Sink, Air and Case/User probes
<b>Monitoring Types</b>	Sink type monitors thermal platforms Air type monitors air space; user positionable Case/User: User-configurable locations and sensor types
<b>Monitor Points Max</b>	120 monitoring points; 2 wire

## SAFETY

<b>Optical</b>	Reflective/absorptive UV-VIS-IR filtered viewing port
<b>Failsafe Temperature*</b>	Over and under temperature limits user-defined Shutdown when limits exceeded
<b>Water</b>	Leak detection shut down
<b>Interlock</b>	Door interlock triggers pause of current drive
<b>Lockout</b>	Chamber door is lockable

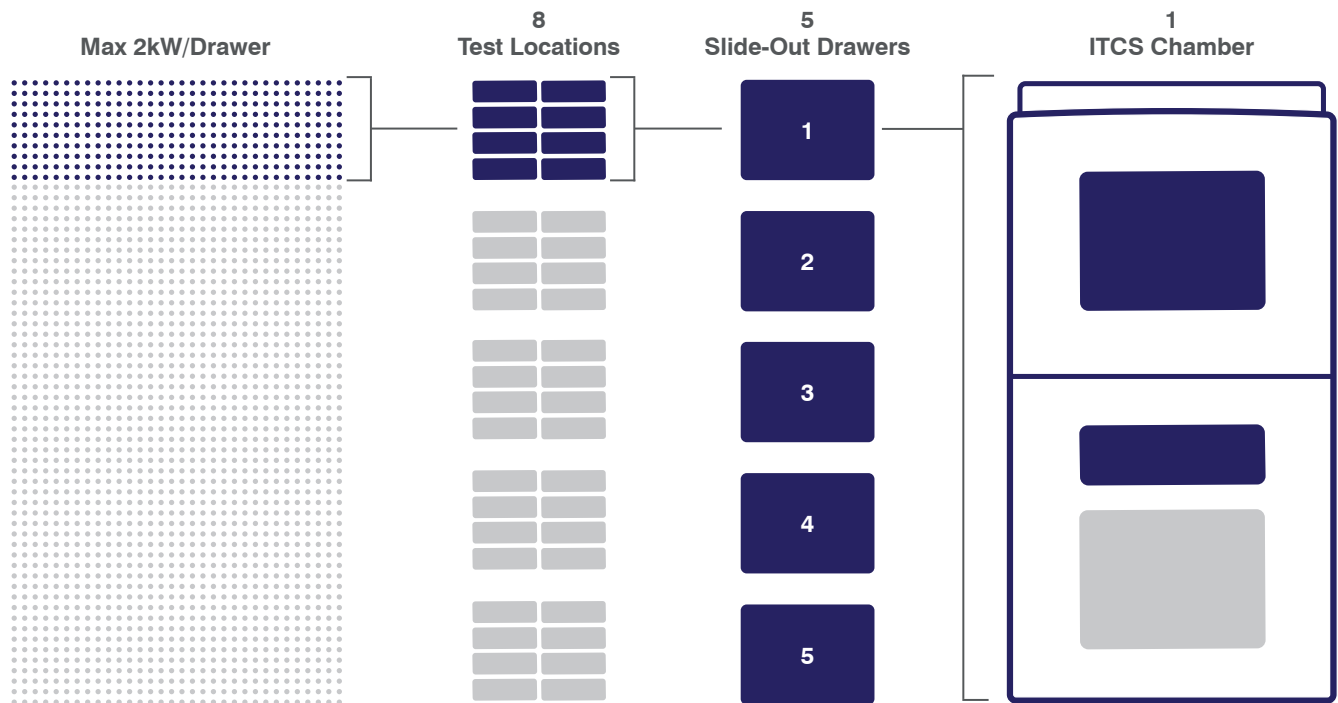
\*with supplied software application



STARPLOT software allows operators to verify ITCS temperature uniformity, ultimately leading to more repeatable, reliable test results.

# HIGH-CAPACITY WITH MODULAR FLEXIBILITY

Integrated high-capacity slide-out drawers simplify loading and unloading. Optional individual drawer controls allow side-by-side testing of devices with different thermal characteristics at different temperatures.



Flexible fixturing supports up to 10kW heat dissipation and device power levels to 1kW.

## Fixturing features

- High-capacity - up to 1,600 individual devices
- 4,500 cm<sup>2</sup> of mounting surface
- May be pre-configured for RTD, thermistor, or thermocouple sensors
- Radiant power capture

## Custom fixturing

- Allows you to move to the high-power ITCS while maintaining legacy load board designs
- Adaptable to virtually any load board type, including load boards with clamp attachments and pogo-pin connections

## Load board services

Vektrex provides load board design services for the flexible and efficient n+1 load board architecture

**Let us help you get started with the right boards, fixturing, and drive electronics.**



# GLOBAL SUPPORT

Our network of global representatives and support centers are ready to provide industry-leading expertise and local service.



Vektrex designs and manufactures high-performance LED test solutions for leading manufacturers and LM-80 labs worldwide. Industry-leading SpikeSafe™ current sources provide high-power DC and performance-pulsed capability optimized for next-generation

LED and SSL products. Solutions include reliability, LM-80 and light measurement systems, thermal control chambers, software and components.

**For more information about Vektrex products and solutions visit [vektrex.com](http://vektrex.com)**

High-performance LED test solutions.



858.558.8282 | [info@vektrex.com](mailto:info@vektrex.com) | [vektrex.com](http://vektrex.com)