Customization of High Voltage Systems, EO Test Systems and Optronic Sensor Systems is Our Core Strength
Company Profile

We specialize in design and development of Electronics, Optoelectronics and Laser-based Modules, Sub-assemblies and Systems. Our core competence is in customizing High Voltage Systems for Detonics Applications, Optoelectronics Sensor Modules and Systems and Electro-optic Test Systems as per customers’ specifications. We also offer Technical Consultancy in the areas of Electronics and Optoelectronics Engineering including Design, Packaging/Integration, Product Prototyping and Subsystem and System-level Test and Evaluation. We have qualified and experienced human resource and well-equipped test lab.

Product Line

- **Electro-optic (EO) Test Systems** for Evaluation of Laser Guided Munitions, Infrared Guided Missiles, Beam Riders, Laser Sensors for Countermeasures and Guidance Applications
- **Optronic Sensor Modules and Systems** for Laser Warning, Proximity Sensing and Target Seeking Applications, Evaluation of Laser Target Designators and Laser Range Finders and a Variety of Detonics Applications
- **High Voltage Electronics** including High Voltage Power Supply Modules, Capacitor Charging Units, High Voltage Triggered Switches, Single and Multi-output Pulse Charge/Discharge Units for a variety of Applications in Detonics
- **High Speed Analog Front End Modules** and **Embedded Digital Processing Modules** for Laser Sensor, Laser Seeker and Laser Range Finder Applications

*Customization of High Voltage Systems, EO Test Systems and Optronic Sensor Systems is Our Core Strength*
We provide a wide range of customized Electro-optic (EO) System Solutions for test and evaluation of Laser Sensors, Laser Seekers, Laser Target Designators and Laser Range Finders for both serviceability checks and comprehensive characterization. We also offer EO test systems for serviceability checks of Laser Guided Munitions and Single-colour and Two-colour Infrared Guided Missiles. EO Test Systems intended for serviceability checks are battery operated field portable systems. EO Test Systems intended for comprehensive characterization are bench top units. Both manual control and PC interface options can be offered for parametric control. We also customize system packaging as per the requirements of the user.

Laser Sensor & Seeker Evaluation Kit

Type: LASSEK-1064, LASSEK-1064-H, LASSEK-1064-EH

Laser Sensor & Seeker Evaluation Kit is available in three models: LASSEK-1064, LASSEK-1064-H and LASSEK-1064-EH. All three models are portable Electro-optic Test Systems that can be used for laboratory and field evaluation of a wide range of laser sensors operating at 1064 nm. The systems generate a collimated pulsed laser beam at user defined pulse repetition frequency (PRF) and power density. Adjustable power density feature allows simulation of different operational ranges. They also have CW beam option to facilitate viewing of laser spot through night vision device. A collinear visible beam is provided to facilitate alignment of test system with sensor under test. A variant capable of setting the power density, the PRF and the pulse width from a remote PC using RS-232/RS-422 protocol is also offered.

Specifications

- **Type of Laser**: Semiconductor Diode Laser
- **Operating Wavelength**: 1064 ± 10 nm
- **Pulse Width (Settable)**: 10, 20, 30 and 40 ns
- **Pulse Repetition Frequency (PRF)**: 5 – 50 Hz
- **Inter-Pulse Interval Range**: 20 – 200 ms
- **PRF Resolution in Time Interval**: 1 μs
- **Power Density Range**: 0.0005 – 5 mW/cm² (LASSEK-1064), 0.0005 – 10 mW/cm² (LASSEK-1064-H), 0.0005 – 50 mW/cm² (LASSEK-1064-EH)
- **Laser Spot Diameter**: 60 mm
- **Dimensions**: Not more than 475 mm × 135 mm × 140 mm (L × B × H)
- **Weight**: Not more than 6 kg

**Typical Applications**

- Laser sensor evaluation in both direct and scattered illumination modes
- Laser seeker evaluation for Sensitivity, PRF Compatibility and False Code Rejection
- Laser guided munitions serviceability check
HIGH VOLTAGE ELECTRONICS

Under the category of HIGH VOLTAGE ELECTRONICS, the company offers customized development of a wide range of High Voltage Switched Power Supply Modules both for standalone use as well as for OEM applications; Capacitor Charging Units, High Voltage High Current Triggered Switches configured around triggered spark gaps as well as solid state switches for a range of switching voltage and current specifications and Fixed Output Energy and Variable Output Energy Pulse Charge/Discharge Units for single and multiple outputs for a range of applications in Detonics.

Variable Output High Voltage Module HVU-25

HVU-25 is a compact High voltage unit with variable output voltage. The desired output voltage can be set by using appropriate value of an external resistance. Salient features include high stability, short circuit protection, and variable output feature. It is best suited for High voltage capacitor charging applications. The unit comprises of a high voltage module and a high voltage control module.

Specifications

- Input voltage : 18 - 36 V
- Output voltage : 0 to 25 KV
- Output ripple : < 500mV
- Output voltage settable using an external resistor
- Short circuit protection
- Dimensions : 65 mm(H) × 300 mm(L) × 140 mm(W)
- Two level input protection

Miniature High Voltage Modules  HVU-10 and HVU-15

HVU-10 and HVU-15 are miniature High Voltage Modules that produce regulated high voltage outputs of 10kV and 15kV respectively. Salient features include internal charging resistance and high output voltage stability. The module has high peak pulsed current rating that allows faster charging. High output voltage is available through high voltage co-axial connector. The module is ideally suited to energy storage charge/discharge applications where the stored energy is discharged through low impedance loads.

Specifications

- Input voltage : 18-36VDC
- Output voltage : 10kV (HVU-10), 15 kV (HVU-15)
- Internal resistance : 2MΩ
- Output Ripple : 0.1%Vp-p
- Load Regulation : 0.01%
- Line Regulation : 0.01%
- Dimensions : 170 mm (L) × 70mm (W) × 60mm (H) (HVU-10/15)
Variable Energy Pulse Charge/Discharge Unit

**Variable Energy Pulse Charge/Discharge Unit** is a complete charge and discharge unit capable of delivering pulse energy in the range of 1 to 6 Joules through the load. Basic building blocks of the unit include *High Voltage Power Supply Module, High Voltage Capacitor, High Voltage Switch, High Voltage Trigger Circuit* and *Auxiliary Power Supplies* – all contained in one unit. The output is brought out through a high voltage connector. The load can be connected across the connector. The energy stored in capacitor can be made to discharge through load on application of a TTL/CMOS/28Volt trigger pulse. The unit has *Arming/Disarming* feature to guarantee safe operation during testing.

**Specifications**

- **Delivered Energy**: 1 to 6 Joules (User Selectable)
- **Peak Current Pulse Amplitude**: Not less than 3 kA
- **Current Pulse Width**: 2 ± 0.5μs
- **Input Voltage Range**: 18 – 36 VDC
- **Operating Temperature Range**: −40°C to +85°C
- **Input Trigger Pulse**: TTL/CMOS/28 Volt pulse

*Customized solutions are offered as per user-defined pulse discharge parameters*

**Features**

- Input trigger pulse optically isolated from high voltage circuitry for enhanced immunity to spurious triggering
- Built-in Arming/Disarming Circuit
- Voltage Monitor with Digital Display
- Battery Operation for Field Use

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**High Voltage High Current Triggered Switches (HVS-06-16, HVS-12-16)**

**High Voltage High Current Triggered Switches** are hybrid switches configured around an ultrafast triggered high voltage spark gap. Input trigger pulse is optically isolated from high voltage switch circuit for enhanced immunity to spurious triggering. All components used in the design are qualified for most stringent environmental qualification. The Normally Open (NO) switch contacts are brought out through a MIL-qualified high voltage connector.

**Specifications**

- **Self Breakdown Voltage**: 6 kV (HVS-06-16), 12 kV (HVS-12-16)
- **Operating Voltage Range**: 2 – 4 kV (HVS-06-16), 4 – 10kV (HVS-12-16)
- **Peak Discharge Current**: 16 kA (Single Shot and 0.05 Hz), 4 kA (10Hz PRF)
- **Maximum Switched Energy**: 400J
- **Rise Time**: 20 ns
- **Input Trigger**: 5 Volt Pulse (TTL/CMOS)
- **Input Power**: 18 – 36 VDC
- **Operating Temp. Range**: −40°C to +85°C
- **Dimensions**: 82 mm × 82 mm × 70 mm
The company offers a range of customized solutions of Analog Modules/Subassemblies primarily for the lasers and optoelectronics field used in various military, medical and industrial applications. Three major types of Analog Modules offered under this category include High Speed Trans-Impedance Amplifiers for front end optoelectronic conversion, Pulse Stretchers for processing of nanosecond pulses and High Bandwidth Amplifiers with/without AGC. The Trans-Impedance Amplifiers are offered for a wide range of input optical pulse widths, operational wavelength and trans-impedance gain specifications. Pulse Stretchers are offered for input electrical pulse in the range of 5 to 100 nanoseconds and stretched output pulse width up to 100 microseconds. High Bandwidth Amplifiers with bandwidth greater than 100 MHz are offered to user specified voltage gain with/without AGC feature.

Under this category, the company offers a wide range of Photo Sensors including Single-element Sensors, Array Sensors and Quadrant Sensors covering user specified wavelength band from ultraviolet to far infrared. We also offer customized development of large active area, fast response time single element and quadrant sensors using our unique array technology. We also offer customized solutions for development of sensor systems including Laser Warning Sensors for user specified wavelength band, field-of-view and angle-of-arrival accuracy parameters and Laser Seekers for Laser Guided Munitions. We also offer customized development of portable battery operated Raman-based Spectroscopic Sensor Systems for detection and identification of hazardous chemical and explosive materials, Laser Proximity Sensors for various applications, Laser-based Interferometric Sensors for Detonics applications and Optical Target Locator Systems.

High Speed Large Active Area Array Sensors with Pre-amplifier are high speed quadrant sensor modules configured around a two-dimensional array of high speed photo sensors. The array sensor with an overall active area of 1 cm$^2$ and 4 cm$^2$ per quadrant and a rise time of 8 ns are ideally suited for use in Laser warning sensors and Laser seekers requiring wide field-of-view operation and fast response time. These sensor modules are available both as sensor modules as well as sensors with integrated preamplifiers. These sensor modules can also be customized as per user defined specifications of Active Area, Bandwidth and Preamplifier Trans-impedance Gain.
Ultra-Compact Long Range Laser Proximity Sensor (LPS-1000)

*Ultra-Compact Laser Proximity Sensor Type LPS-1000* is a laser based distance measurement unit configured around an eye-safe semiconductor diode laser module. The sensor can be configured to generate a TTL/CMOS pulse at the output when the distance between the sensor and the target is in the programmed window. The sensor operates from 18 – 36 VDC or 9 – 16 VDC. Output TTL/CMOS pulse is available on a miniature co-axial connector. The Laser proximity switch can also be designed as per user specifications.

### Specifications
- **Type of Laser**: Semiconductor Diode Laser (Class-1)
- **Laser Wavelength**: 1550 nm (Eye-safe)
- **Maximum Measurable Range**: 1000 m
- **Range Measurement Update Rate**: 50 Hz (Every 20 ms)
- **Range Measurement Accuracy**: ≤ 1m
- **Measurement Range Gate (Proximity Sensing)**: 0 – 1000 m (5 m increments)
- **Peak Power Consumption**: ≤ 2.5 Watts (Measuring) ≤ 0.05 Watts (Standby)
- **Life Time**: ≥ 10 million laser shots
- **Input Power**: 9 – 16 or 18 – 36 VDC
- **Dimensions**: 100 mm × 70 mm × 50 mm

**Laser Seeker**

Laser seeker is based on a two-dimensional array of high-speed photo sensors configured as a large active area quadrant sensor. The laser seeker has a wide proportional FOV of ± 12.5° enabled by the use of large active area quadrant sensor. The novel sensor topology of using an array sensor as a quadrant sensor ensures a fast rise time. The data on azimuth and elevation angles is outputted on RS-232/RS-422 protocol at 9600 bps. Laser Seeker Front End Modules with voltage outputs from four quadrants are also offered for OEM applications.

### Specifications
- **Operational wavelength**: 1064nm
- **Proportional FOV**: ± 12.5°
- **Sensitivity**: 1µW/cm²
- **Rise time**: 8ns
- **PRF range**: 5 – 50Hz
- **Maximum Operational Range**: 5 km (@ visibility of 10 km)