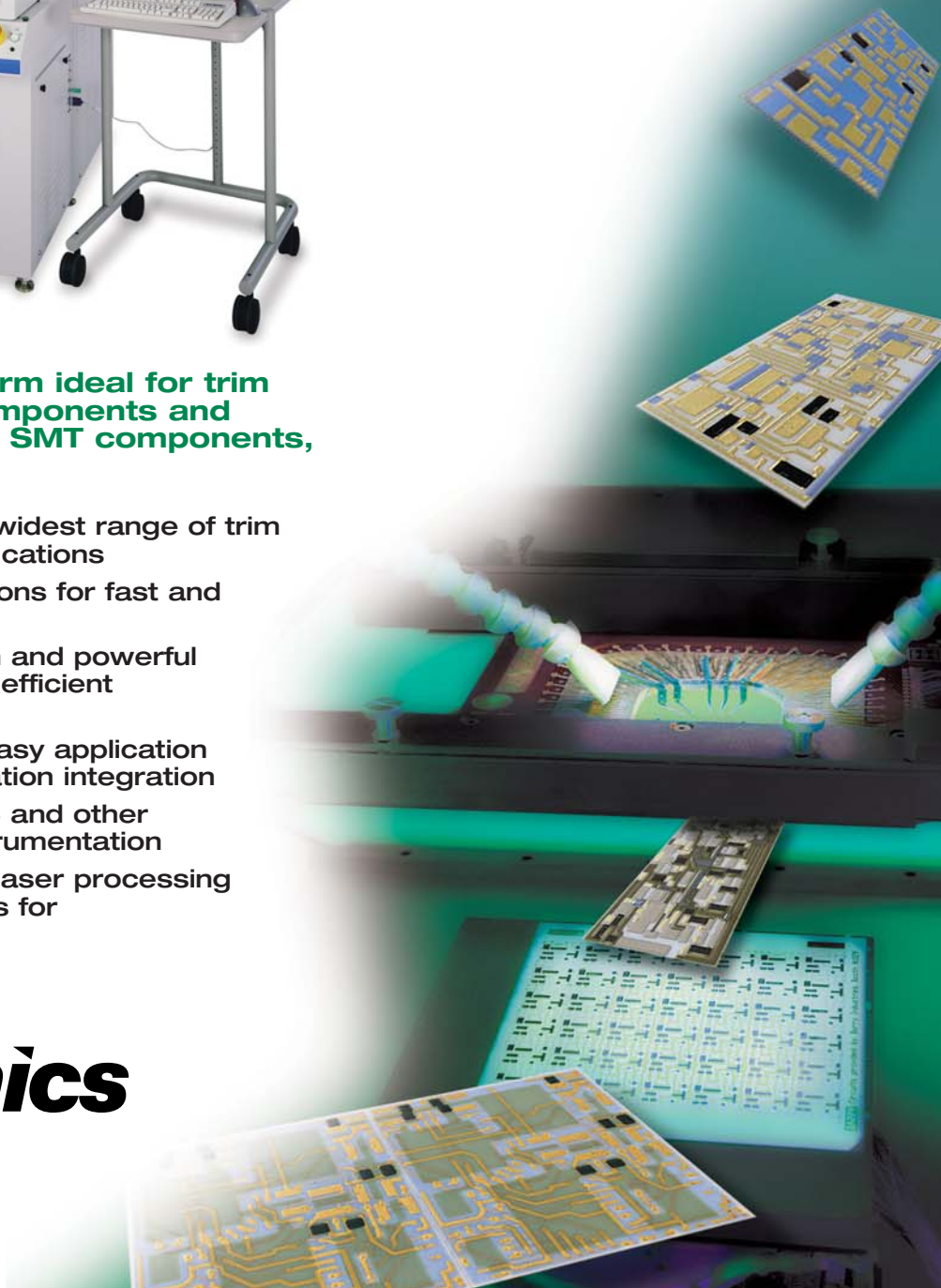
# TrimSmart® LT2100

**Thick Film Laser Trim System**


**An advanced new platform ideal for trim and test of thick film components and circuits, including PCBs, SMT components, and hybrids.**

- Versatility to address our widest range of trim and micro-machining applications
- Fully integrated test functions for fast and accurate measurement
- Patented beam calibration and powerful vision system for precise, efficient beam positioning
- VersiTrim™ Software for easy application programming and automation integration
- VXI architecture with GPIB and other interfaces for custom instrumentation
- Advanced diode-pumped laser processing in IR or green wavelengths for demanding applications



GSI Lumonics

## The Ultimate in Laser Trim

The *TrimSmart® LT2100* is the next-generation thick film laser trim system from GSI Lumonics. Built on a stiffer frame for maximum process stability and featuring a larger work area for devices up to 10 x 12 inches in size, the *LT2100's* modular system design helps you process devices more effectively, more quickly, and more easily.

With the *LT2100*, GSI Lumonics has expanded your access to cutting lenses, lasers, and laser wavelengths, resulting in an unprecedented level of flexibility for addressing more applications.

## VXI Measurement System

The *LT2100's* current nulling bridge provides exceptional measurement speed and accuracy. For precision resistor or voltage trims, the *LT2100's* measure and matrix instrumentation conforms to VXI form and function standards. The instruments are specifically designed for high-speed and high-volume operation while providing benchmark CpK process capability. The VXI architecture easily accommodates hundreds of VXI instruments and the *LT2100's* controller also supports IEEE and RS-232 extensions.

## High-Speed Precision Beam Positioning

Beam positioning is accomplished via a high-speed galvanometer. A patented calibrated beam field produces absolute coordinates for increased beam positioning efficiency. The *LT2100's* vision system provides clear viewing of substrates, even under low contrast conditions. Its non-destructive edge sensing automates the alignment process and eliminates the need for operator intervention. GSI Lumonics also offers the latest in video pattern recognition technology and software for fast and precise target alignment for applications such as printed circuits, where component placement is not precisely repeatable.

## Advanced Optical System

The *LT2100's* laser spot size is adjustable to provide a flexible depth of focus, allowing users to optimize beam characteristics to match substrate height variations and resistor size without changing or realigning optics. A rotary polarizer laser control technique provides precision laser power control and stability.

## VersiTrim™ Software for Fast, Automated Setup

he *LT2100's VersiTrim* software runs under an enhanced Windows 2000 environment and provides system control through a highly flexible, fully data-driven spreadsheet with full graphical interface. The spreadsheet editor greatly minimizes the level of experience required to quickly set the system up to process new applications. Users simply enter their specification into data fields and the program executes the logic according to the trim and measurement parameters from the spreadsheet. To make changes or additions to an application, only the spreadsheet needs to be edited.

## Flexible, Advanced Mechanical Design

The *LT2100* includes a new air-bearing stage for positioning in X, Y, and theta, and a motorized Z-axis probe frame for greater probing precision. Its modular design can easily be reconfigured to accommodate custom production automation.

# Specifications

### Optical System

- **Beam positioner type:** Precision high-speed galvanometer
- **Field size:** 100 x 100mm (30µm Standard IR)
  65 x 65mm (Optional 20µm IR)
  100 x 100mm (Optional 25µm 532nm)
- **Positioning accuracy:** ±25µm
- **Resolution:** 1.52µm
- **Repeatability:** ≤12.6µm
- **Spot size:** 30µm (standard 1064nm)
  20µm (optional 1064nm)
  25µm (optional 532nm)
- **Depth of focus:** 380µm@ 30µm spot
  170µm@ 20µm spot
  750µm@ 25µm spot

### Laser System

- **Laser type:** Diode pumped Q-switched YAG laser, wavelength 1064nm or 532nm
- **Output power:** 6W (standard 1064nm)
  3W (optional 532nm)
  6W (optional 532nm)
- **Wavelength:** Standard 1064nm (6W IR)
  Optional 532nm (3W Green)
  Optional 532nm (6W Green)
- **Pulse width:** <100ns @ 10kHz

### Physical

- **Power:** 100/120/230/240VAC ±10%, 50/60Hz, single phase
- **Air:** 90 psi filtered to 5µm and free of contaminants

### X/Y Part Positioning

- **Type:** Dual axis air bearing linear motor
  - XY Travel: 12" x 17"
  - XY Resolution: < 0.0005"
  - XY Repeatability: <0.0002"

### Z-Theta Stage

- **Type:** High speed pnuematic with adjustable downstroke and motorized theta
  - Z travel: 0.125 to 0.500" adjustable
  - Z repeatability: 0.0005"
  - Can handle up to 25 lbs of probe force
  - Theta travel: +/- 5 degrees
  - Theta resolution 0.05 degrees resolution
  - Optional motorized Z-stage available with 0.0005" Z step resolution

### Probing Assembly

- Motorized probe card holder adjustable with three independent motor controls to adjust Z, roll and pitch (0.5" total travel range)
- Manual X and Y adjustment (0.5" total travel range)
- Operator control panel for simple convenient operation

### Measurement System

- **Type:** High-speed, Force V, current nulling bridge
- **Range:** 0.1Ω – 1000MΩ
- **Resistance measurement accuracy (full Kelvin):**
  - Low range (<50Ω): ±0.02% ± (1.0%/R)
  - Mid range: ±0.02% of value
  - High range (>160K): ±0.02% ± 0.02% per MegaOhm
- **Voltage source:**

| Range | Resolution | Accuracy (%FSR) |
|---|---|---|
| ±4V | 31µV | ±0.005% |
| ±16V | 125µV | ±0.005% |
| ±32V | 250µV | ±0.005% |

- **DC voltage (range 100mV – 160V):**

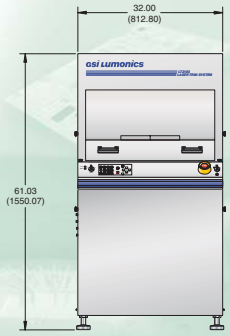
| Range | Accuracy | %FSR |
|---|---|---|
| 100mV–400mV | ±0.1% | ±1mV |
| 1V–16V | ±0.05% | ±1mV |
| 10V–160V | ±0.05% | ±5mV |

### Software

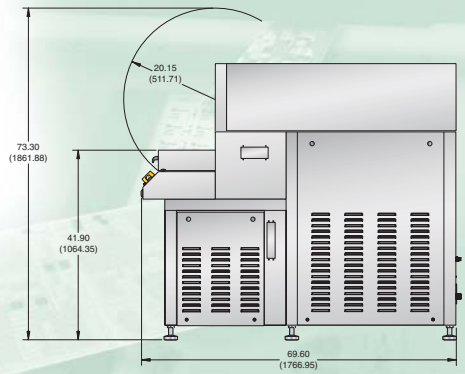
- VersiTrim system software includes resistor programming using spreadsheet format, Microsoft® C++ compiler, GSI Lumonics laser trim language library, and on-line data statistics

### Options

- Low-ohm option (5mΩ to 0.5Ω)
- Additional matrix
- Choice of analog cables
- Pattern recognition vision option
- Power meter
- Stored data bit PIO card
- PC/AT IEEE interface card
- Arc lamp-pumped laser (1.064µm)
- Programmable Z stage




*Dimensions in inches (mm)*




Specifications are subject to change. Please consult Product Center for complete details.
The classification of the TrimSmart® LT2100 is Class 1/I.

**GSI Lumonics**

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