



# TEST SYSTEMS SELECTION GUIDE

ILX Lightwave has been a pioneer in photonic test and measurement instrumentation for over thirty years, starting with the industry's first precision laser diode current source in 1986. Since then, ILX has continued to grow and evolve with the expanding photonic industry, building a tradition of innovation, quality, and customer service.

This tradition has pushed ILX Lightwave to go beyond meeting customers' needs to exceeding their expectations. The highly technical nature and rapid evolution of the photonic industry required a technically perceptive, customer focused approach. ILX not only delivers quality products, but also provides unsurpassed technical support and customer service, ensuring that you receive the best return on your investment.

As photonic components become increasingly complex, ILX Lightwave is committed to providing high performance equipment that will improve manufacturing yields, reduce manufacturing cycle times, and lower overall cost of ownership. In addition to developing new instruments and systems, ILX is also advancing the underlying technologies to ensure that your test and measurement needs are met now and in the future.

## Why Choose ILX Lightwave?

### Experience.

For over thirty years, ILX Lightwave has been a pioneer in laser diode instrumentation and test systems, starting with the industry's first precision laser diode current source in 1986. Since then, ILX Lightwave has continued to grow and evolve with the expanding photonic industry, building a tradition of innovation, quality, and customer service.

### Quality.

ILX Lightwave has maintained ISO 9000 certification since 2001. Strong internal systems for problem identification and resolution have resulted in continuous improvement of our products and services. ILX believes that quality is not just something you build into a product, it's something you build into everything you do.

### Commitment.

ILX Lightwave's mission is to be the world leader in laser diode instrumentation and test systems.

### After Sales Support.

ILX understands the need for fast, technically accurate responses to all support requests. Our customers have direct access to technically qualified applications and service engineers to ensure the highest level of technical support.

In addition, customers can easily download one of our application notes, tech notes, or white papers that further discuss common industry challenges from [www.newport.com/ilxlightwave](http://www.newport.com/ilxlightwave).

## BENCHTOP RELIABILITY AND BURN-IN SYSTEM

- Up to 128 device capacity
- Operating currents up to 3A with customer fixtures
- Precision, four-wire voltage measurements
- APC, ACC, and LIV test modes
- ReliaTest™ system control software
- External and internal photodiode measurement
- Easy loading and unloading of devices
- EAM and SOA options
- Modular architecture
- Independent current source per device



The Sentry LRS-9434SS is a fully functional laser diode testing system with all the functionality of the full rack system utilizing the latest ReliaTest™ supervisory software. It has a reduced footprint so it can be used on a benchtop to reduce facility requirements and decrease initial cost. It can be rack mounted into a standard Sentinel LRS-9434 rack for future capacity expansion as needed.

The ReliaTest™ system supervisory software with enhanced speed and data export capability. Standard features include easy test scenario configuration, flexible data graphing and reporting, and secure data management.

### LRS-9434SS

System Capacity	128 devices
Device Types Supported	TO-Can, TOSA, COC, Custom
Devices per Fixture	Up to 32
Temperature Range	25 °C - 150 °C
Temperature Control	Per Fixture
Temperature Accuracy	±2.0 °C
Temperature Stability	±0.2 °C
Output Polarity	Bi-polar, user selectable
Laser Drive Current Range <sup>1</sup>	1 to 500 mA
Laser Drive Current Setpoint Accuracy	±0.5 mA
Laser Drive Current Stability <sup>2</sup>	±0.5 mA
Compliance Voltage	3.0V typical; high voltages available upon request
Control Modes	ACC, APC, LIV
Optical Power Wavelength Range	400 - 1600 nm
Optical Power Accuracy	±20%
Optical Power Repeatability	±1%

<sup>1</sup> Higher currents can be achieved by summing current sources on custom fixtures. <sup>2</sup> Stability measured over 1000 hours.

In keeping with our commitment to continuing improvement, ILX Lightwave reserves the right to change specifications without notice or liability for such changes. For full specifications, please consult the product brochure.

## LASER DIODE RELIABILITY AND BURN-IN TEST SYSTEM

- Up to 1408 device capacity
- Operating currents up to 3A with custom fixtures
- Precision four-wire voltage measurements
- APC, ACC, and LIV test modes
- ReliaTest™ system control software
- External and internal photodiode measurement
- Easy loading and unloading of devices
- EAM and SOA options
- Modular architecture
- Independent current / device source



The Sentinel LRS-9434 Laser Diode Reliability and Burn-In System leverages ILX Lightwave's industry leading laser diode control and protection technology to provide customers with a high performance system for reliability test, burn-in, and qualification testing.

The LRS-9434 incorporates precise, individual fixture control allowing the user to run up to 44 independent tests, each at a unique temperature in the range of 40°C to 150°C.

The system includes the ReliaTest™ graphical user interface supervisory software. Multiple device types and test scenarios are easily configured without complicated programming.

In addition, careful attention to data management and fault mode handling ensures data integrity even through power black outs.



### LRS-9434

System Capacity	1408 devices
Device Types Supported	TO-Can, TOSA, COC, Custom
Devices per Fixture	Up to 32
Temperature Range	25 °C - 150 °C
Temperature Control	Per Fixture
Temperature Accuracy	±2.0 °C
Temperature Stability	±0.2 °C
Output Polarity	Bi-polar, user selectable
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Laser Drive Current Stability <sup>2</sup>	±0.5 mA
Compliance Voltage	3.0V typical; higher voltages available upon request
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Contact us toll free at 1-800-459-9459 or 1-406-556-2481 (international)

# HIGH POWER LASER DIODE RELIABILITY AND BURN-IN TEST SYSTEM

- High power
- High density, low cost per channel
- Up to 30 Amps per device
- Optimized for high power single emitters
- Integrating sphere based power measurement
- Modular design allows flexible configuration and future expansion
- Reliable data management



The Sentinel LRS-9550 High Power Laser Diode Reliability and Burn-In System has up to eight independent, temperature controlled shelves supporting up to 512 high power devices per system. The user is able to run multiple independent tests, increase throughput, and lower overall cost of test.

The 9550's flexible design allows accommodation of multiple package styles in the same system. The system supports ACC test modes with standard current ranges as high as 30A per device. For life test applications, fixtures on a single shelf may be temperature controlled to provide temperature stabilities of better than 0.2°C from 25°C to 85°C.

The LRS-9550 ReliaTest™ system control software enables the user to get tests up and running quickly. Multiple device types and test scenarios are easily configured without complicated programming. The software's fault handling ensures that valuable life test data is preserved even through power black outs, brown outs, and control computer shutdowns.



## LRS-9550

System Capacity (10A per device)	512
System Capacity (20A per device)	256
Device Types Supported	C-Block, CoC, Butterfly, Custom
Temperature Control	
Control Type	TEC and circulating water with digital PID control
Temperature Range	25 - 85 °C
Temperature Accuracy	±2.0 °C
Laser Drive Current Range	0 - 20 A (higher currents available upon request)
Laser Drive Current Setpoint Accuracy	±0.05 A
Laser Drive Current Stability	±500 ppm
Compliance Voltage	2.5V typical; higher voltages available upon request
Transients	
Operational	<40 mA
1kV EFT, Surge	<80 mA
Laser Voltage Range	0 - 5 V
Laser Voltage Accuracy	±0.05 V
Optical Power Wavelength Range	400 - 1600 nm
Optical Power Accuracy	±20%
Optical Power Repeatability	±1%

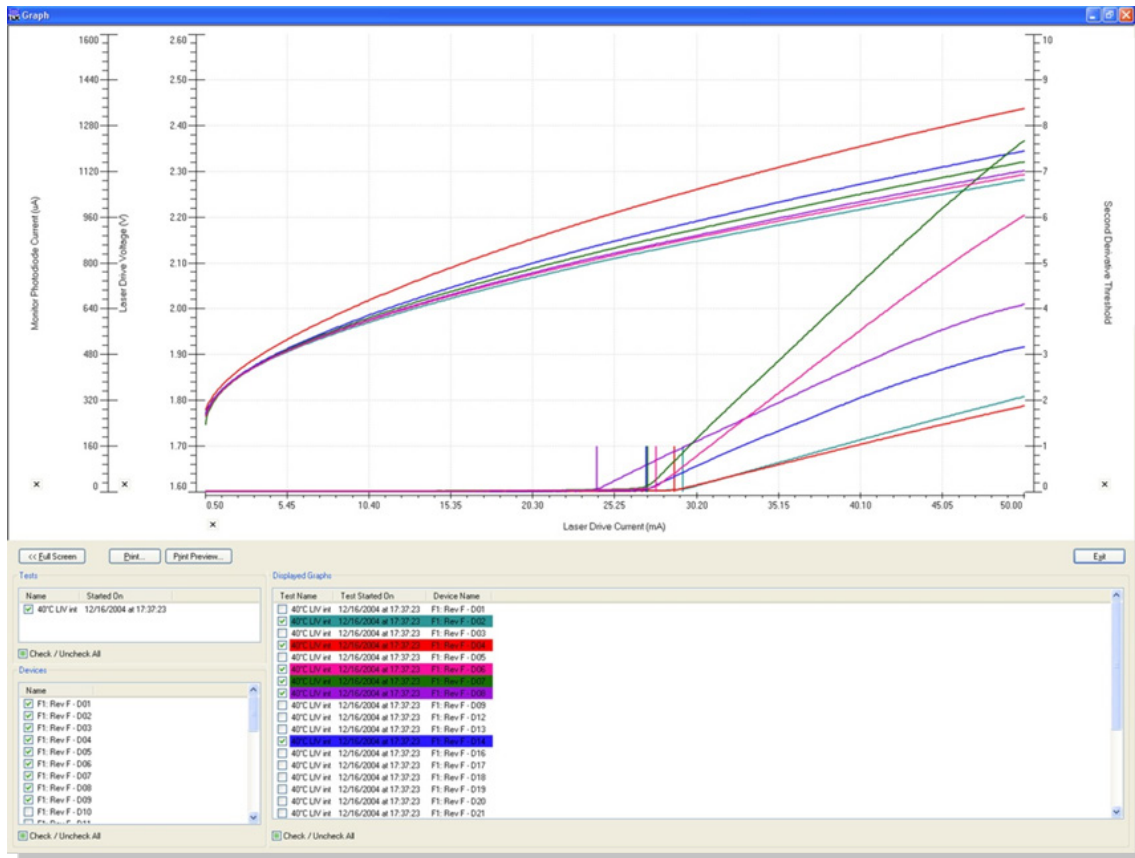
# RELIA TEST™ SOFTWARE

- Fault monitoring
- Easily enter device parameter limits
- Set driver currents and temperature control
- Find device thresholds through the graphical display
- View any data points by graphical display or CSV files
- View graphical display while tests are running
- Run multiple tests simultaneously
- Export data while testing is in process

ReliaTest™ is a Windows® based system control software designed to provide at-a-glance device status monitoring, active alarms, and event messaging. It allows the user to easily manage and monitor tests in progress through its graphical user interface. It can automatically run multi-step test scenarios in LIV, ACC, and APC modes without complicated programming.

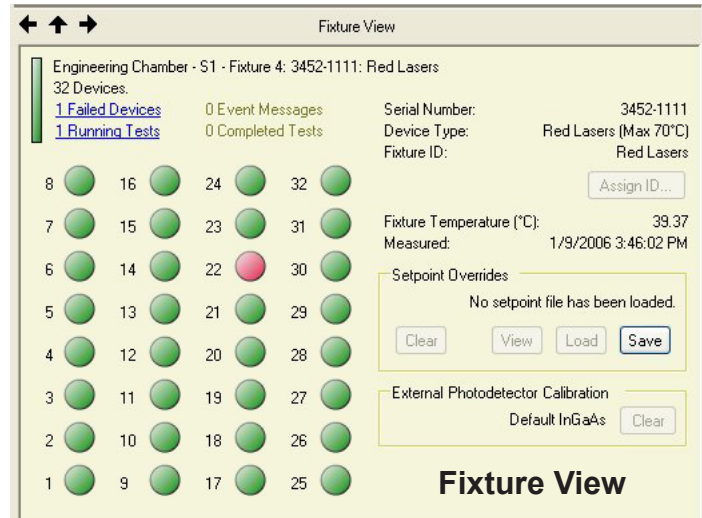
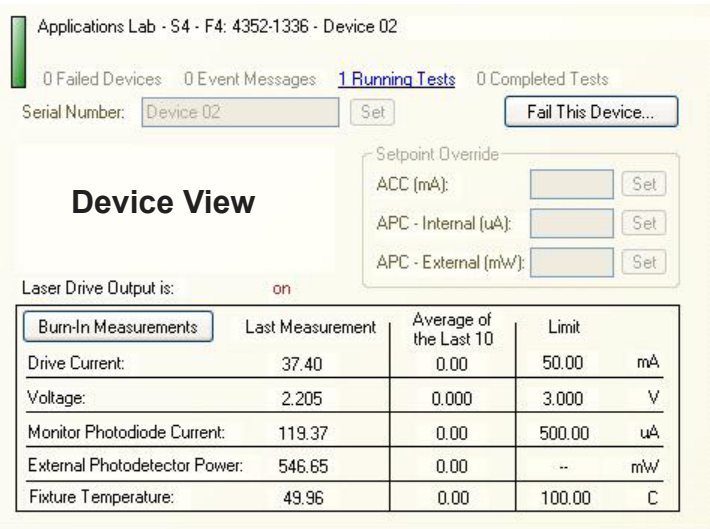
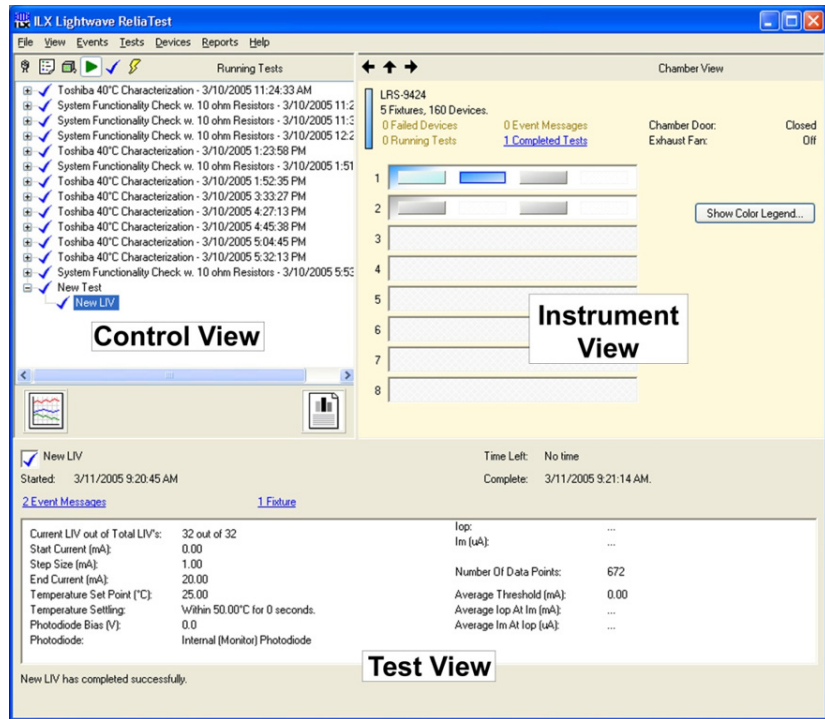
The software helps to easily configure multiple device types and test configurations while being easy to navigate for investigation of errors and analyze device failures during tests and through test events. The user can specify certain test failure criteria to control and monitor up to 44 independent tests. Test results can be viewed by real time graphical data within the software or the data can be exported to CSV files.

The software's fault handling ensures that valuable life test data is presented even through power black outs, brown outs, and control computer shutdowns.



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- Current or historical test selection
- System, fixture, and device views
- Test details and status
- Color coded results
- View instant burn-in measurements
- Easily view fixtures and devices
- Compare devices running in different tests
- Read real time temperatures for fixtures, current, voltage and optical power



## PRODUCTION BURN-IN SYSTEM

- Drive currents up to 500 mA
- Up to 8960 device capacity
- Easy to load device carriers
- Touch screen operator panel
- Flexible test configurations with up to 14 tests per rack
- Remote access for uploading test recipes and downloading reports
- Test complete, event, and system event log reports
- Pass / fail test reporting
- Bar code scanner for fast data input
- Web based remote interfacing
- Modular architecture



The Spartan LTS-7410 system is specifically designed for low power, high volume production burn-in applications. It is capable of delivering 500 mA of drive current to 8960 devices in a single rack.

Temperature and current control of the tests is accomplished through independent control of up to 14 test scenarios in a single rack. The user can adjust current ramp rates, output current set points, temperature set points, and temperature operating windows.

The system uses a web interface that can be used to create test recipes and download test data. It also utilizes an intuitive color touch panel designed for the operator and removing the need for a separate computer control system.

Device carriers are custom designed for the user's laser package.



### LTS-7410

System Capacity	8960 devices (14 laser test units)
Device Current Drive Configuration	8 devices in series
Device Types Supported	TO-Can, TOSA, COC, Butterfly, Custom
Current Range per Source	10 - 500 mA
Set Point Accuracy	$\pm 4$ mA
Set Point Resolution	1 mA
Stability (200 hours)	$\pm 5$ mA
Noise and Ripple (mA rms)	$\pm 1$ mA + 0.5% SP
Compliance Voltage	3V per device
Adjustable Drive Current Ramp Rate	25 - 500 mA / minute
Temperature Range	40 - 120 °C
Temperature Set Point Accuracy	$\pm 5.0$ °C
Temperature Stability	$\pm 0.5$ °C
Dimensions	31.5" x 31.5" x 74.8" (0.8m x 0.8m x 1.9m)

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## HIGH POWER PRODUCTION BURN-IN SYSTEM

- Drive currents up to 30A
- Up to 252 device capacity
- Easy to load device carriers
- Touch screen operator panel
- Flexible test configurations with up to 9 tests per rack
- Remote access for uploading test recipes and downloading reports
- Test complete, event, and system event log reports
- Modular architecture
- Bar code scanner for fast data input
- Web based remote interfacing
- Pass / fail test reporting

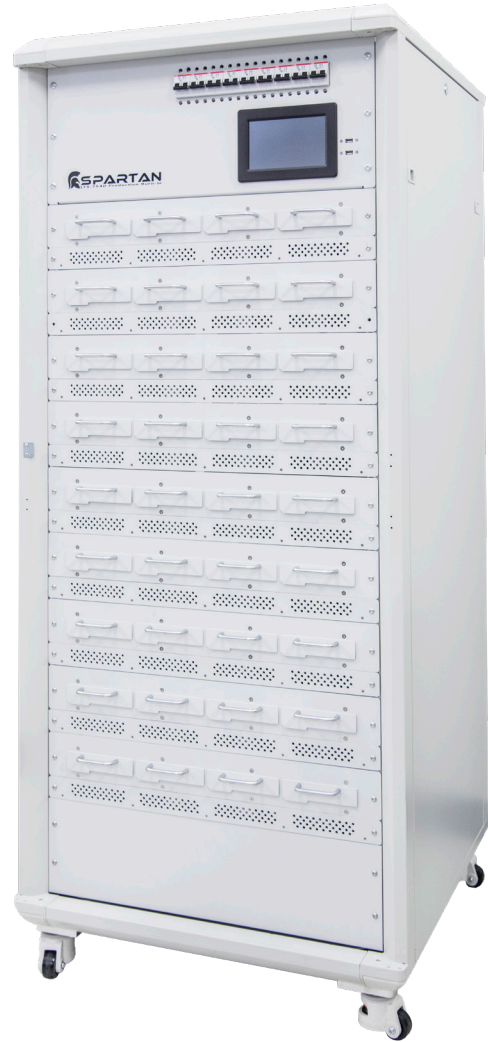


The Spartan LTS-7540 system is capable of delivering up to 30 amps of drive current to 252 devices in a single rack. It is designed for production burn-in to provide an economical solution without sacrificing quality and laser diode protection.

Temperature and current control of the tests is accomplished through independent control of up to nine test scenarios in a single rack. The user can adjust current ramp rates, output current set points, temperature set points, and temperature operating windows.

The system uses a web interface that can be used to create test recipes and download test data. It also utilizes an intuitive color touch panel designed for the operator and removing the need for a separate computer control system.

Device carriers are custom designed for the user's laser package.



### LTS-7540

System Capacity	252 devices (9 laser test units)
Device Current Drive Configuration	7 devices in series
Device Types Supported	TO-Can, TOSA, COC, Butterfly, Custom
Current Range per Source	5 - 30 A
Set Point Accuracy	$\pm 100$ mA
Set Point Resolution	100 mA
Stability (200 hours)	$\pm 200$ mA
Noise and Ripple (mA rms)	$\pm 150$ mA
Compliance Voltage	3V per device
Adjustable Drive Current Ramp Rate	1 - 30 A / minute
Temperature Range	20 - 80 °C
Temperature Set Point Accuracy	$\pm 5.0$ °C
Temperature Stability	$\pm 0.5$ °C
Dimensions	31.5" x 31.5" x 74.8" (0.8m x 0.8m x 1.9m)

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# LASER DIODE INSTRUMENTATION

In addition to large volume laser diode functional test and burn-in systems, ILX Lightwave offers a complete line of standalone instrumentation including:

- Laser diode drivers
- TEC temperature controllers
- Laser diode controllers
- Modular controllers
- Optical power and wavelength meters
- Fiber optic power meters
- Single package laser diode mounts

These products provide optimal performance and quality that is ideal for the research, development, and characterization of new designs. Our reliable performance and best-in-class laser diode protection help to ensure accurate and trustworthy results in the lab or on the manufacturing floor.

For further information on our laser diode instruments, please visit our website [www.newport.com/ilxlightwave](http://www.newport.com/ilxlightwave) or call one of our technical sales engineers at 1-800-459-9459.



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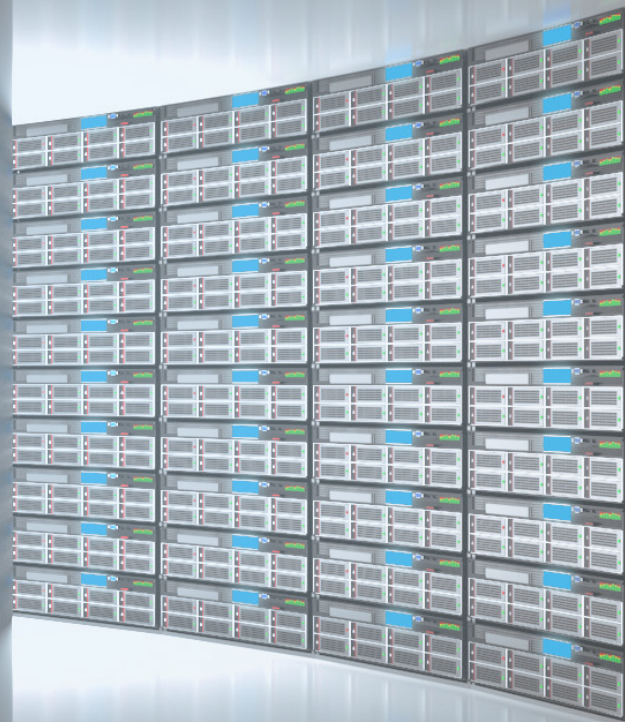
## TECHNICAL REFERENCES

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- Laser Diode Control
- Thermoelectric Temperature Control
- Optical Power and Wavelength Measurement
- Laser Diode Testing
- Fixturing

Technical references, such as application notes, technical notes, white papers, product manuals, and LabVIEW® drivers are available for download from the Newport website.

- Application Note 1: Controlling Temperatures of Laser Diodes Thermoelectrically
- Application Note 2: Selecting and Using Thermistors for Temperature Control
- Application Note 3: Protecting Your Laser Diode
- Application Note 4: Thermistor Calibration and the Steinhart-Hart Equation
- Application Note 5: An Overview of Laser Diode Characteristics
- Application Note 6: Choosing the Right Laser Diode Mount for Your Application
- Application Note 8: Mode Hopping in Semiconductor Lasers
- Application Note 11: Pulsing a Laser Diode
- Application Note 12: The Differences Between Threshold Current Calculation Methods
- Application Note 13: Testing Bond Quality by Measuring Thermal Resistance of Laser Diodes
- Application Note 14: Optimizing TE Drive Current
- Application Note 16: Measuring Wide Linewidth Source with the OMH-6700B Series Waveheads
- Application Note 17: AD590 and LM335 Sensor Calibration
- Application Note 18: Basic Test Methods for Passive Fiber Components
- Application Note 20: PID Control Loops in Thermoelectric Temperature Controllers
- Application Note 21: High Performance Temperature Control in Laser Diode Test Applications
- Application Note 22: Modulating Laser Diodes
- Application Note 23: Laser Diode Burn-In and Reliability Testing
- Application Note 25: Novel Power Meter Design Minimizes Fiber Power Measurement Inaccuracies
- Application Note 26: ReliaTest L/I Threshold Calculations
- Application Note 27: Intensity Noise Performance of Semiconductor Lasers
- Application Note 28: Characterization of High Power Laser Diode Bars
- Application Note 29: Accelerated Aging Test of 1310 nm Laser Diodes
- Application Note 30: Measuring High Power Laser Diode Junction Temperature and Package Thermal Impedance
- Application Note 31: Mounting Considerations for High Power Laser Diodes
- Application Note 32: Using a Power / Wavehead for Emitter Level Screening of High Power Laser Diode Bars
- Application Note 33: Estimating Laser Diode Lifetimes and Activation Energy
- Application Note 34: Using USB Through Virtual COM Ports
- Application Note 37: Measuring and Reducing Noise Using an LDX-3620B Ultra Low Noise Laser Diode Current Source
- Application Note 38: Achieving Millikelvin Temperature Stability



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