

Product Features

Fast and accurate L/I/V curve generation

Internal, high-resolution power meter

Up to 5000 data points generated in seconds

Drive current ranges of 200/500 mA and 2/4 A

32 W output temperature controller

SPA-9000 Windows® Software or LabVIEW® Drivers available

The LPA-9080 Series Parameter Analyzer, when combined with the SPA-9000 Windows-based parametric analysis software, forms the ideal system for fast, accurate parametric analysis of laser diodes. This system has been optimized for fast, precise L/I/V curve generation, making it the ideal parametric test solution for incoming inspection, production line testing, and R&D applications.

The LPA-9082 supports drive current ranges of 200 mA and 500 mA, while the LPA-9084 provides ranges of 2 A and 4 A, allowing you to select the analyzer that best matches your laser diode testing requirements. Both versions contain a 32-watt temperature controller for precise temperature control of internal peltier coolers. The LPA-9080 also contains a precision power meter with 16-bit resolution, that connects with our entire line of OMH-6700 Power/Wavelength measurement heads. L/I, V/I, and other associated curves of up to 5000 data points can be generated and stored in seconds.

LPA 9080 Series

Parameter Analyzer

NEW!
Wavelength
Measurement
Capability



A Dedicated System for Laser Diode Parametric Analysis

ILX Lightwave
Laser Diode Instrumentation & Test Systems

LPA 9080 Series

Parameter Analyzer

A Dedicated System for Parametric Analysis

The LPA-9080 Series is the industry's only laser diode controller and power meter specifically dedicated to parametric analysis applications. Now accurate, low-noise drive current, laser diode protection, and fast L/I/V curve generation is available in one instrument, eliminating the need for multiple instrument connections and complex triggering and programming details.

Sophisticated Power and Wavelength Measurement Capabilities

The power meter in the LPA-9080 contains ILX's precision power measurement capabilities with full 16-bit resolution. Twelve photocurrent input ranges from 50 nA to 10 mA support a wide range of detector head inputs. The LPA-9080 seamlessly integrates our full line of OMH-6700 Series Power & Wavelength Measurement Heads, providing accurate power measurements as well as a power-averaged center wavelength measurement. This line of sensor heads can cover optical power measurements from as low as -90 dBm to +30 dBm. Our proprietary integrating sphere technology also eliminates polarization dependencies in your measurement. A wide range of fiber-optic connectors are also available.

Two Software Choices Available

ILX Lightwave offers two software choices for the LPA-9080:

- The SPA-9000 Parametric Analysis Application Software for Windows® 98/95/NT
- LabVIEW® Driver

The SPA-9000 software contains a full-featured Test Edit Wizard for creating flexible, powerful laser diode test configurations. The software's flexibility allows for user customization of screen-based and printed test output. The built-in Microsoft Access® database provides easy data analysis, report generation, or export of data to other enterprise applications.

The SPA-9000 software also has a Manual Control mode, for operating the LPA-9080 as a laser diode controller with internal power meter. For more information on the SPA-9000 software, visit our website at www.ilxlightwave.com.

The LabVIEW® driver gives you a quick start in creating custom applications to your exact specifications. These drivers give you access to the full complement of GPIB-based commands for the LPA-9080, while allowing you to integrate additional test instrumentation to your functional test station. LabVIEW® drivers are downloadable from ILX's Web site at no additional cost.

A Complete Testing Solution

The laser diode controller in the LPA-9080 contains all of ILX's proven laser diode protection features, including adjustable compliance voltage with up to 10 V of headroom, and fast shut-off circuitry. The 32 W output temperature controller can handle the demands of most internal peltier cooling elements found in today's laser diode packages. To complete your test setup, a complete line of ILX Lightwave laser diode mounts are available for most common package types. These mounts provide convenient, cabled connections to the LPA-9080, and handle variations in laser diode pin-outs through user-configurable connections.

All of this, together with our line of OMH-6700B Measurement heads, combines readily into a complete laser diode test system.

Results You Can Count On

Whether your application is fast, accurate production line testing, reliable incoming laser diode inspection, or highly exacting research and development applications, ILX delivers a powerful testing solution aimed at increasing your productivity and profitability.

Specifications

DRIVE CURRENT OUTPUT

	LPA-9082		LPA-9084	
Output Current Range:	0–200 mA	0–500 mA	0–2000 mA	0–4000 mA
Setpoint Resolution:	4 μ A	10 μ A	40 μ A	80 μ A
Setpoint Accuracy (% of FS):	$\pm 0.05\%$	$\pm 0.05\%$	$\pm 0.05\%$	$\pm 0.05\%$
Compliance Voltage:	0–10 V, adjustable	0–10 V, adjustable	0–10 V, adjustable	0–10 V, adjustable
Temperature Coefficient:	<50 ppm/ $^{\circ}$ C	<50 ppm/ $^{\circ}$ C	<100 ppm/ $^{\circ}$ C	<100 ppm/ $^{\circ}$ C
Short-Term Stability (1 hr.): ²	<20 ppm	<20 ppm	<20 ppm	<20 ppm
Long-Term Stability (24 hr.): ³	<40 ppm	<40 ppm	<40 ppm	<40 ppm
Noise and Ripple: ⁴				
High Bandwidth Mode:	<4 μ A rms	<4 μ A rms	<15 μ A rms	<20 μ A rms
Low Bandwidth Mode:	<2 μ A rms	<2 μ A rms	<10 μ A rms	<10 μ A rms
Transients:				
Operational: ⁵	<3 mA	<3 mA	<4 mA	<4 mA
1kV EFT/Surge: ⁶	<8 mA/<12 mA	<8 mA/<12 mA	<10 mA / <8mA	<10 mA / <8mA

COMPLIANCE VOLTAGE ADJUST

Range:	0–10 V	0–10 V	0–10 V	0–10 V
Resolution:	50 mV	50 mV	50 mV	50 mV
Accuracy (over the range):	$\pm 2.5\%$	$\pm 2.5\%$	$\pm 2.5\%$	$\pm 2.5\%$
	10–202 mA	10–505 mA	40–2020 mA	80–4040 mA

DRIVE CURRENT LIMIT SETTINGS

Range:	1–202 mA	1–505 mA	10–2020 mA	10–4040 mA
Resolution:	1 mA	2 mA	10 mA	20 mA
Accuracy:	± 2 mA	± 5 mA	± 20 mA	± 40 mA

PHOTODIODE FEEDBACK

Type:	Differential	Differential	Differential	Differential
PD Reverse Bias:	0–5V Adjustable	0–5V Adjustable	0–5V Adjustable	0–5V Adjustable
Pd Current Range:	5–5000.0 μ A	5–5000.0 μ A	5–10,000 μ A	5–10,000 μ A
Output Stability: ⁷	$\pm 0.02\%$	$\pm 0.02\%$	$\pm 0.02\%$	$\pm 0.02\%$
Accuracy, Setpoint (% of FS):	$\pm 0.05\%$	$\pm 0.05\%$	$\pm 0.05\%$	$\pm 0.05\%$

EXTERNAL ANALOG MODULATION

Input:	0–10 V, 1 k Ω	0–10 V, 1 k Ω	0–10 V, 1 k Ω	0–10 V, 1 k Ω
Transfer Function:	20 mA/V	50 mA/V	200 mA/V	400 mA/V
Bandwidth (3 dB)				
High Bandwidth: ⁸	DC to 1 MHz	DC to 1 MHz	DC to 250 kHz	DC to 250 kHz
Low Bandwidth: ⁹	DC to 15 kHz	DC to 15 kHz	DC to 10 kHz	DC to 10 kHz

MEASUREMENT

Output Current Range:	0–200.00 mA	0–500.00 mA	0–2000.0 mA	0–4000.0 mA
Output Current Resolution:	0.01 mA	0.01 mA	0.1 mA	0.1 mA
Output Current Accuracy:	$\pm 0.05\%$ of FS	$\pm 0.05\%$ of FS	$\pm 0.1\%$ of FS	$\pm 0.1\%$ of FS
Photodiode Current Range:	0–5,000 μ A	0–5,000 μ A	0–10,000 μ A	0–10,000 μ A
Photodiode Current Resolution:	0.1 μ A	0.1 μ A	1 μ A	1 μ A
Photodiode Current Accuracy:	± 2 μ A	± 2 μ A	± 4 μ A	± 4 μ A
Forward Voltage Range:	0.000–10.000 V	0.000–10.000 V	0.000–10.000 V	0.000–10.000 V
Forward Voltage Resolution:	1 mV	1 mV	1 mV	1 mV
Forward Voltage Accuracy: ¹⁰	± 2 mV	± 2 mV	± 2 mV	± 2 mV

CURRENT SOURCE NOTES

- All values relate to a one-hour warm-up period.
- Over any 1-hour period, half-scale output.
- Over any 24-hour period, half-scale output.
- Measured optically, evaluating noise intensity of a laser diode into a photodetector with 150 kHz Bandwidth. Request ILX Application Note #3.
- Maximum output current transient resulting from normal operational situations (e.g., power on-off, current on-off), as well as accidental situations (e.g., power line plug removal).
- Maximum output current transient resulting from a 1000 V power-line transient spike. Tested to ILX Lightwave Technical Standard #LDC-00196. Request ILX Application Note #3.
- Maximum monitor photodiode current drift over any 30 minute period. Assumes zero drift in responsivity of photodiode.
- 300 mA setpoint, 60 mA modulation current.

LPA 9080 Series

Parameter Analyzer

LPA 9080 Series

Parameter Analyzer

Specifications¹

TEMPERATURE CONTROL OUTPUT

Temperature Control Range: ²	-100.0°C to +199.9°C	
Thermistor Set point	Resolution	Accuracy³
-20°C to 10°C ⁴	0.001°C	±0.2°C
10°C-40°C ⁵	0.05°C	±0.2°C
40°C-70°C ⁵	0.2°C	±0.2°C
AD590 & LM335 Set point	Resolution	Accuracy
-20°C to 50°C	0.01°C	±0.1°C
Short-Term Stability (1 hr.): ⁷	<0.004°C	
Long-Term Stability (24 hrs.): ⁸	<0.01°C	
Output Type:	Bipolar, constant current source	
Compliance Voltage:	>8 V DC	
Short Circuit Output Current:	4 A	
Maximum Output Power:	32 W	
Current Noise and Ripple: ⁹	<1 mA rms	
Current Limit Range:	0-4 A	
Current Limit Set Accuracy:	±0.05 A	
Control Algorithm:	Smart Integrator, Hybrid PI	

TEMPERATURE SENSOR

Types	
Thermistor:	NTC (2-wire)
IC Temperature Sensor:	AD590/LM335
RTD Sensor: ¹⁰	P,100/Other 100 Ω RTD
Thermistor Sensing Current:	10 μA/100 μA
Sensor Bias:	AD590 = 8 V, LM335 = 1 mA,
RTD = 0.8 mA ⁸	
Usable Thermistor Range:	25-450,000 Ω, typical
Typical Sensor Output: ¹¹	
AD590 Current Output:	I(25°C) = 298.2 μA, I ₁ = 1 μA/K
LM335 Voltage Output:	V(25°C) = 2.73 V, V ₁ = 10 mV/K
RTD (P,100) Resistance:	R(25°C) = 109.73 Ω
User Calibration:	Thermistor: Steinhart-Hart, 3 constants, IC Sensors = Two-point

TEC MEASUREMENT

Temperature	Range ¹²	Resolution	Accuracy
10 μA Setting: ¹³	-99.9°C to 199.9°C	0.01°C	±0.1°C
100 μA Setting: ¹⁴	-99.9°C to 199.9°C	0.01°C	±0.05°C
Thermistor Resistance			
10 μA Setting:	0.01 to 450.00 kΩ	0.01 kΩ	±0.05%
100 μA Setting:	0.001 to 45.000 kΩ	0.001 kΩ	±0.05%
TE Current:	-4.000 to 4.000 A	0.001 A	±0.04 A
Voltage: ¹⁵	-10.000 to 10.000 V	1 mV	±30 mV

POWER METER (All models)

Detector Current	
Range:	50, 100, 500 nA; 1, 5, 10, 50, 100, 500 μA; 1, 5, 10 mA
Accuracy:	5% of FS (50-500 nA) 1% of FS (1 μA to 10 mA) 0.5% of FS (50-500 nA) 0.1% of FS (1 μA to 10 mA)
Short-Term Repeatability: ¹	10 mA
Maximum Input Signal:	0-10.1 V, user programmable
Detector Bias:	Read in from detector or calibration files
Responsivity:	Software selectable, 0.01-1000 mW (LPA-9082)
Power Limit Setting:	Software selectable, 0.01-5000 mW (LPA-9084)
Power Limit Resolution:	0.01 mW

POWER METER NOTES

- 1 Data taken every 10 seconds over 10 minutes, ½ scale constant current input, all ranges, 25°C
- 2 <65% relative humidity, non-condensing for ranges 50, 100, 500 nA and 1 A

In keeping with our commitment to continuing improvement, ILX Lightwave reserves the right to change specifications without notice and without liability for such changes.

TEMPERATURE CONTROL NOTES

- 1 All values relate to a one-hour warm-up period.
- 2 Software limits of range. Actual range possible depends on the physical load, thermistor type, and TE module used.
- 3 Accuracy figures are quoted for a typical 10 kΩ thermistor and 100 μA current setting. Accuracy figures are relative to the calibration standard. Both resolution and accuracy are dependent upon the user-defined configuration of the instrument.
- 4 Using 10 kΩ thermistor, on 10 μA setting.
- 5 Using 10 kΩ thermistor, on 100 μA setting.
- 6 Accuracy depends on the sensor model selected, the calibration standard, and the user-defined configuration of the instrument.
- 7 Over any 1-hour period, half-scale output, controlling an LDM-4412 mount@25°C, with 10 kΩ thermistor, on 100 μA setting.
- 8 Over any 24-hour period, half-scale output, controlling an LDM-4412 mount@25°C, with 10 kΩ thermistor, on 100 μA setting.
- 9 Measured at 1 A output over a bandwidth of 10 Hz - 10 MHz
- 10 When used with TSC-599 RTD Sensor Converter.
- 11 Nominal temperature coefficients, I₁ and V_t, apply over the rated IC temperature sensor range.
- 12 Software limits of display range.
- 13 Using a 100 kΩ thermistor, controlling an LDM-4412 mount over -30°C to 25°C
- 14 Using a 10 kΩ thermistor, controlling an LDM-4412 mount over 0°C-90°C
- 15 Voltage measurement accuracy while driving calibration load. Accuracy is dependent upon load used.

GENERAL

Connectors	Photodiode Monitor/Current Source:	9-pin, D-connector, for LASER output and PD input
TE Controller/Sensor:	TE Controller/Sensor:	15-pin, D-connector, for TE output and Sensor input
Photodetector Head:	Photodetector Head:	26-pin, D-connector
External Modulation:	External Modulation:	BNC, instrumentation amplifier input
GPIB Interface:	GPIB Interface:	Meets ANSI/IEEE Std 488.1-1987 Meets ANSI/IEEE Std 488.2-1987
Size (HxWxD):	Size (HxWxD):	4" x 8.5" x 13.4", 102 mm x 216 mm x 340 mm
Usage:	Usage:	Indoor use only
Protection:	Protection:	Ordinary protection (Not protected against harmful ingress of moisture)
Class:	Class:	Class I (Grounded type)
Power Requirements:	Power Requirements:	100 - 115/220 - 240 V, 50/60 Hz, 3.0/1.5 A Supply voltage fluctuations are not to exceed 10% of the nominal supply voltage
Pollution:	Pollution:	Pollution Degree II
Installation (OverVoltage):	Installation (OverVoltage):	Category II for transient Overvoltages
Humidity ² :	Humidity ² :	<80% relative humidity, non-condensing
Temperature:	Temperature:	0°C to +40°C operating; -40°C to +70°C storage/transportation
Maximum Altitude:	Maximum Altitude:	3000 m
Operation:	Operation:	Suitable for continuous operation
Weight:	Weight:	13 lbs (6 kg) (9082), 14 lbs (6.5 kg) (9084)
Laser Safety Features:	Laser Safety Features:	Key switch, interlock and output delay (meets CDRH US21 1040.10)
Display Type:	Display Type:	2-digit, green LED

ORDERING INFORMATION

LPA-9082	Laser Parameter Analyzer (200/500 mA Current Source, 32 W TEC)
LPA-9084	Laser Parameter Analyzer (2000/4000 mA Current Source, 32 W TEC)
SPA-9000	Parametric Analysis Windows® Software
CC-305S	Current Source/Laser Diode Mount Interconnect Cable
CC-306S	Current Source/Unterminated Interconnect Cable
CC-501S	TE Controller/Unterminated Interconnect Cable
CC-505S	TE Controller/Laser Diode Mount Interconnect Cable
TS-510	Calibrated 10 kΩ Thermistor
TS-520	Uncalibrated 10 kΩ Thermistor
TS-530	Uncalibrated AD590LH IC Temperature Sensor
TS-540	Uncalibrated LM335AH IC Temperature Sensor
TSC-599	RTD Temperature Sensor Converter
RM-136	Rack Mounting Kit
LabVIEW® Instrument Driver	

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