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LDX 3600 Series

High Power Laser Diode Driver

PRELIMINARY

Product Features

- Output current from 10 to 120 amps for driving high power laser diodes
- CW and QCW operating modes
- High setpoint accuracy for precision L-I-V testing
- Precision 4-wire forward voltage measurements
- Multiple laser diode protection features
- Event and pulse trigger input and output with programmable delays
- Temperature monitor with thermistor input
- Power monitor input for external photodiode
- IEEE488/GPIB interface

The LDX-3600 Series High Power Laser Diode Drivers are a family of high performance current sources designed specifically for controlling and testing high power laser diodes. Five family members provide currents from 10 amps to 120 amps with a compliance voltage of up to 10V in CW or QCW modes. High setpoint accuracy, low output noise, and 4-wire voltage measurement make these drivers ideal for precision, high power laser diode L-I-V testing. A unique power display mode allows laser diode power to be set based on programmable slope efficiency and threshold current parameters. External output power monitoring is supported through an independent photodiode measurement circuit.

Multiple laser diode protection features include adjustable voltage and current limits, output shorting relays, and low operating and power line transients. In addition, all 3600 Series drivers accept a thermistor input for temperature monitoring with programmable temperature limits affording additional laser diode protection.

Designed for automated laser diode testing in CW or pulse mode, these drivers combine an IEEE488/GPIB interface with trigger inputs and outputs for fast, accurate laser diode characterization. For virtual instrument programming, LabView instrument drivers are available free of charge and can be downloaded from the ILX website.



High Performance Current Sources for High Power Laser Diode Testing

ILX Lightwave

Laser Diode Instrumentation & Test Systems

LDX 3600 Series

High Power Laser Diode Driver

PRELIMINARY

Specifications [1]

	LDX-3650	LDX-3660	LDX-3670	LDX-3680	LDX-3690
DRIVE CURRENT OUTPUT					
Output Current Range:	0A to 10A	0A to 20A	0A to 40A	0A to 80A	0A to 120A
Set-Point Resolution:	5 mA	10 mA	20 mA	40 mA	60 mA
Set-Point Accuracy[2]:	0.1% +10 mA	0.1% +20 mA	0.1% +40 mA	0.1% +80 mA	0.1% +120 mA
Settling Time[3]:	10 ms	10 ms	10 ms	10 ms	10 ms
Maximum Power:	100W	200W	400W	800W	1200W
Compliance Voltage:	10V max	10V max	10V max	10V max	10V max
Temperature Coefficient[4]:	100 ppm/°C	100 ppm/°C	100 ppm/°C	100 ppm/°C	100 ppm/°C
Stability[5]:	100 ppm	100 ppm	100 ppm	100 ppm	100 ppm
Noise and Ripple[6]:	5 mA	10 mA	20 mA	40 mA	60 mA
Transients:					
Operational[7]:	<10 mA	<20 mA	<40 mA	<80 mA	<120 mA
1kV EFT/Surge[8]:	<40 mA	<80 mA	<160 mA	<320 mA	<480 mA
QCW MODE					
Pulse Width:					
Range:	10 µs to 1 s	10 µs to 1 s	10 µs to 1 s	10 µs to 1 s	10 µs to 1 s
Resolution:	1 µs	1 µs	1 µs	1 µs	1 µs
Accuracy:	1 µs	1 µs	1 µs	1 µs	1 µs
Pulse Frequency:					
Range:	1 to 1000 Hz	1 to 1000 Hz	1 to 1000 Hz	1 to 1000 Hz	1 to 1000 Hz
Resolution:	1 Hz	1 Hz	1 Hz	1 Hz	1 Hz
Accuracy9:	0.1%	0.1%	0.1%	0.1%	0.1%
Duty Cycle:	0 to 100%	0 to 100%	0 to 100%	0 to 100%	0 to 100%
Resolution:	0.1%	0.1%	0.1%	0.1%	0.1%
Rise/Fall Time:	<5 µs	<5 µs	<5 µs	<5 µs	<5 µs
Overshoot:	<5%	<5%	<5%	<5%	<5%
VOLTAGE LIMIT					
Range:	0 – 10 V	0 – 10V	0 –10 V	0 – 10 V	0 – 10 V
Resolution:	40 mV	40 mV	40 mV	40 mV	40 mV
Accuracy[9]:	±2.5%	±2.5%	±2.5%	±2.5%	±2.5%
CURRENT LIMIT					
Range:	0 to 10.1A	0 to 20.2A	0 to 40.4A	0 to 80.8A	0 to 120.2A
Resolution:	40 mA	80 mA	160 mA	320 mA	470 mA
Accuracy[9]:	±1%	±1%	±1%	±1%	±1%

EVENT TRIGGERING (ALL MODELS)

Trigger Output:	TTL; Active high, 50 Ω
Pulse Width:	10 µs
Delay:	Programmable
Range:	10 µs to 1 s
Resolution:	1 µs
Jitter:	500 ns
Trigger Input:	TTL; edge triggered
Delay to Output:	Programmable
Range:	10 µs to 1 s
Resolution	1 µs
Jitter:	500 ns

PULSE TRIGGERING (ALL MODELS)

Trigger Input:	TTL level; single shot to 1 KHz
Delay to Output:	1 µs
Trigger Output:	TTL level

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High Power Laser Diode Driver

PRELIMINARY

Specifications

	LDX-3650	LDX-3660	LDX-3670	LDX-3680	LDX-3690
ANALOG OUTPUT					
Transfer Function[10]:	400 mV/A	200 mV/A	100 mV/A	50 mV/A	33.3 mV/A
MEASUREMENT					
Output Current Display:					
Range:	10.00 A	20.00 A	40.00 A	80.00 A	120.0 A
Resolution:	100 mA	100 mA	100 mA	100 mA	100 mA
Forward Voltage:					
Range:	0.00 to 10.00 V	0.00 to 10.00 V	0.00 to 10.00 V	0.00 to 10.00 V	0.00 to 10.00 V
Resolution:	5 mV	5 mV	5 mV	5 mV	5 mV
Accuracy[11]:	±10 mV	±10 mV	±10 mV	±10 mV	±10 mV
PD Current					
Range:	0 to 10 mA	0 to 10 mA	0 to 10 mA	0 to 10 mA	0 to 10 mA
Resolution:	1 µA	1 µA	1 µA	1 µA	1 µA
Accuracy[12]:	0.1% + 600 nA	0.1% + 600 nA	0.1% + 600 nA	0.1% + 600 nA	0.1% + 600 nA
PD Responsivity					
Range (mA/W)[13]:	0.001 to 20.000	0.001 to 20.000	0.001 to 20.000	0.001 to 20.000	0.001 to 20.000
Resolution (mA/W):	.001	.001	.001	.001	.001
Power Control Range:					
Range (W):	0.0 to 250.0	0.0 to 250.0	0.0 to 250.0	0.0 to 250.0	0.0 to 250.0
Resolution:	0.1	0.1	0.1	0.1	0.1
Temperature Monitor					
Sensor Type:	10kThermistor	10k Thermistor	10k Thermistor	10k Thermistor	10k Thermistor
Temperature Range:	10° to 60°C	10° to 60°C	10° to 60°C	10° to 60°C	10° to 60°C
Thermistor Current:	100 µA	100 µA	100 µA	100 µA	100 µA
Accuracy[14]:	±0.1°C	±0.1°C	±0.1°C	±0.1°C	±0.1°C

GENERAL

GPIB Interface:	IEEE488/GPIB
Power Requirements:	100-120 VAC ±10% 220-240 VAC ±10%
Operating Temperature:	0°C to 40°C
Storage Temperature:	-40°C to 70°C
Humidity:	20-85% non-condensing
Safety:	21CFR 1040.10
EMC:	98/336/EEC
Safety:	21CFR 1040.10
	EN60825-1
	EN60950
	EN61010
	EN61326
	98/336/EEC
	Low voltage directive
Connectors:	
Current Output:	Hybrid DB25 pin
Measurement:	DB 9 rear panel
Interlocks:	Terminal Block; rear panel
Ext. Pulse:	BNC front panel
Input/Output Trigger:	BNC rear panel
Analog Out:	BNC rear panel

NOTES

1. All values relate to a one-hour warm-up period at room temperature, 25°C.
2. ± (% of set point + mA)
3. Maximum current step rate = TBD ms
4. % of full scale
5. ± % of full scale over 1 hour
6. mA rms.
7. Maximum output current transient from normal operations (e.g. power on-off, current on-off) as well as accidental situations (e.g. power line plug removal).
8. Maximum output current transient resulting from a 1000V power line transient spike..
9. % of reading.
10. Output voltage is a 4V full scale.
11. Four wire voltage measurement at the load. voltage measurement accuracy while driving calibration load. Accuracy is dependent upon load and cable used.
12. ± (% of reading + nA)
13. mA/W, the responsivity value is user-defined and is used to calculate the optical power.
14. At 25°C, accuracy while using default thermistor constants and ILX Lightwave TS-520 uncalibrated 10 kW thermistor.

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

ORDERING INFORMATION

LDX-3650	10A High Power Laser Diode Current Source
LDX-3660	20A High Power Laser Diode Current Source
LDX-3670	40A High Power Laser Diode Current Source
LDX-3680	80A High Power Laser Diode Current Source
LDX-3690	120A High Power Laser Diode Current Source
CC-365S	40A Unterminated High Power Current Source Interconnect Cable
CC-385S	120A Unterminated High Power Current Source Interconnect Cable
	LabView Instrument Driver

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