

# 4400 SERIES

## LASERSOURCE HIGH POWER LASER DRIVER



The 4400 Series LaserSource is a high-accuracy laser driver capable of supplying up to 100A for high-power laser and LED applications. This laser driver offers QCW operation, digital I/O, temperature monitoring and industry leading laser protection systems.



### PILOT LASER CONTROL

Constrant current or constant voltage operating modes



### OVERLAPPING LASER PROTECTION

Including safety interlock, ESD protection, hardware limits for current & voltage, soft power-on, and intermittent contact safeguards.



### QUASI-CONTINUOUS WAVE MODE

QCW mode provides low duty cycle, high current pulses to manage thermal loading. Pulse widths as narrow as 100  $\mu$ s.



### ANALOG MODULATION

Bandwidths up to 40 kHz.



### MULTIPLE OPERATING MODES

Choose from: ● Constant Current ● Constant Power ● Constant Voltage



### SIMPLE USER INTERFACE

Easy to Read, High Contrast VFD Display with all messages and settings in plain English. View All 3 At Once:

● Current Set Point ● Photodiode Current ● Laser Voltage

## AT-A-GLANCE

Current Ranges:

- ▶ 10 Amp / 56 Volt
- ▶ 15 Amp / 28 Volt
- ▶ 20 Amp / 48 Volt
- ▶ 30 Amp / 28 Volt
- ▶ 40 Amp / 24 Volt
- ▶ 60 Amp / 14 Volt
- ▶ 80 Amp / 12 Volt
- ▶ 100 Amp / 10 Volt

High Accuracy

- ▶ Up to 0.05% of reading + 0.005% of scale

Low Noise

- ▶ As Low as <5 mA

Auxiliary I/O

- ▶ Two Temperature Sensors
- ▶ Digital I/O
- ▶ One Form-C Relay Contact

Remote Operation via PC

- ▶ USB / RS-232 Connections



## GROUND LOOPS: ELIMINATED. YOUR LASER IS PROTECTED.

A ground loop can destroy your laser in an instant. Every input and control circuit on the LaserSource is electrically isolated. Offset voltages, ground connections, and AC noise will never act on your system.

***No other laser driver on the market has this capability.***

# 4400

## 10 A TO 30 A

### SPECIFICATIONS

		4400-10-56	4400-15-28	4400-20-48	4400-30-28	
CW Mode Specifications	Setpoint	<b>Laser Current</b>				
		Range (A)	0 – 10	0 - 15	0 - 20	0 - 30
		Resolution (A)	0.0005	0.0005	0.001	0.002
		Accuracy ( $\pm$ [% set+A])	0.05% + 0.005	0.05% + 0.0075	0.05% + 0.01	0.05% + 0.015
		Stability (ppm, time)	< 10, 1 hour			
		Temperature Coeff (ppm/°C)	50			
		Noise/Ripple (mA rms)	< 5	< 8	< 10	< 15
		Transients (mA)	< 20	< 30	< 40	< 60
		Compliance Voltage (V)	56	28	48	28
		<b>Photodiode Current</b>				
	Range ( $\mu$ A)	25 – 20000				
	Resolution ( $\mu$ A)	1				
	Accuracy ( $\pm$ [% set+ $\mu$ A])	0.05% + 2				
	Stability (ppm, time)	< 200, 24 hours				
	Temperature Coeff (ppm/°C)	< 200				
	PD Bias (V)	0 to -5V, programmable				
	<b>Laser Voltage</b>					
	Range (V)	0 – 56	0 – 28	0 – 48	0 – 28	
	Resolution (V)	0.001				
	Accuracy ( $\pm$ [% set+V])	0.05% + 0.005				
Stability (ppm, time)	< 50, 1 hour					
Temperature Coeff (ppm/°C)	< 100					
<b>External Modulation</b>						
Input Range	0 – 10V, 10k $\Omega$					
Modulation Bandwidth (kHz)	40	40	35	25		
QCW Mode Specifications	Setpoint	<b>Laser Current (ACC)</b>				
		Range (A)	0.75 – 10	1.13 - 15	1.50 - 20	2.25 - 30
		Resolution (A)	0.0005	0.0005	0.001	0.002
		Accuracy ( $\pm$ [% set+A])	0.1% + 0.010	0.1% + 0.015	0.1% + 0.020	0.1% + 0.030
		Compliance Voltage (V)	56	28	48	28
		Overshoot (%)	< 7			
	Zero Current (A)	< 0.020	< 0.030	< 0.040	< 0.060	
	Measurement	<b>Laser Current</b>				
		Resolution (A)	0.01			
		Accuracy ( $\pm$ [% reading+A])	2.5% + 0.025			
		<b>Laser Voltage</b>				
		Resolution (V)	0.01			
		Accuracy ( $\pm$ [% reading+V])	2% + 0.04			
	Parameters	<b>Photodiode Current</b>				
		Resolution ( $\mu$ A)	10			
Accuracy ( $\pm$ [% reading+ $\mu$ A])		2% + 100				
<b>Pulse Width</b>						
Range / Resolution / Accuracy (ms)		0.1 – 600 / 0.001 / 0.015				
<b>Frequency</b>						
Range / Resolution / Accuracy (Hz)	1 – 1000 / 0.1 / 0.5					
General	<b>Duty Cycle</b>					
	Range (%) / Resolution (%)	0.1 – 90 / 0.1				
	Rise/Fall Times ( $\mu$ s)	< 10	< 12	< 12	< 15	
General	<b>Output Connector</b>					
	Laser Connector	13W3, female				
	Pilot Laser Signal	On 13W3				
Auxiliary Connector	DB25, female					

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## 40 A TO 100 A SPECIFICATIONS

		4400-40-24	4400-60-14	4400-80-12	4400-100-10	
CW Mode Specifications	Setpoint	<b>Laser Current</b>				
		Range (A)	0 – 40	0 - 60	0 - 80	0 - 100
		Resolution (A)	0.002	0.005	0.005	0.005
		Accuracy ( $\pm$ [% set+A])	0.05% + 0.02	0.05% + 0.03	0.05% + 0.04	0.05% + 0.05
		Stability (ppm, time)	< 10, 1 hour			
		Temperature Coeff (ppm/°C)	50			
		Noise/Ripple (mA rms)	< 20	< 30	< 40	< 50
		Transients (mA)	< 80	< 120	< 160	< 200
		Compliance Voltage (V)	24	14	12	10
		<b>Photodiode Current</b>				
		Range ( $\mu$ A)	25 – 20000			
		Resolution ( $\mu$ A)	1			
		Accuracy ( $\pm$ [% set+ $\mu$ A])	0.05% + 2			
		Stability (ppm, time)	< 200, 24 hours			
		Temperature Coeff (ppm/°C)	< 200			
PD Bias (V)	0 to -5V, programmable					
<b>Laser Voltage</b>						
Range (V)	0 – 24	0 – 14	0 – 12	0 – 10		
Resolution (V)	0.001					
Accuracy ( $\pm$ [% set+V])	0.05% + 0.005					
Stability (ppm, time)	< 50, 1 hour					
Temperature Coeff (ppm/°C)	< 100					
<b>External Modulation</b>						
Input Range	0 – 10V, 10k $\Omega$					
Modulation Bandwidth (kHz)	25	20	20	15		
CW Mode Specifications	Setpoint	<b>Laser Current (ACC)</b>				
		Range (A)	3.00 – 40	4.5 - 60	6.0 - 80	7.50 - 100
		Resolution (A)	0.002	0.005	0.005	0.005
		Accuracy ( $\pm$ [% set+A])	0.1% + 0.040	0.1% + 0.060	0.1% + 0.080	0.1% + 0.100
		Compliance Voltage (V)	24	14	12	10
		Overshoot (%)	< 7			
	Zero Current (A)	< 0.080	< 0.120	< 0.160	< 0.200	
	Measurement	<b>Laser Current</b>				
		Resolution (A)	0.01			
		Accuracy ( $\pm$ [% reading+A])	2.5% + 0.025			
		<b>Laser Voltage</b>				
		Resolution (V)	0.01			
		Accuracy ( $\pm$ [% reading+V])	2% + 0.04			
	Parameters	<b>Photodiode Current</b>				
		Resolution ( $\mu$ A)	10			
Accuracy ( $\pm$ [% reading+ $\mu$ A])		2% + 100				
<b>Pulse Width</b>						
Range / Resolution / Accuracy (ms)		0.1 – 600 / 0.001 / 0.015				
<b>Frequency</b>						
Range / Resolution / Accuracy (Hz)	1 – 1000 / 0.1 / 0.5					
Parameters	<b>Duty Cycle</b>					
	Range (%) / Resolution (%)	0.1 – 90 / 0.1				
	Rise/Fall Times ( $\mu$ s)	< 20	< 25	< 30	< 50	
General	<b>Output Connector</b>					
	Laser Connector	13W3, female	Bus Bar, M6	Bus Bar, M6	Bus Bar, M6	
	Pilot Laser Signal	On 13W3	DB9, female	DB9, female	DB9, female	
Auxiliary Connector		DB25, female				

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# 4400 GENERAL SPECIFICATIONS

		General Specifications
Pilot Laser	<b>Operating Modes</b>	Constant Current or Constant Voltage
	<b>Current</b>	
	Range (mA)	0 - 500
	Resolution (mA)	1
	Accuracy ( $\pm$ [% reading+mA])	1% + 3
	Compliance Voltage (V)	> 5
	Current Limit Accuracy ( $\pm$ mA)	5
	<b>Voltage</b>	
	Range (V)	0 - 5
	Resolution (V)	0.01
Accuracy ( $\pm$ [% reading+V])	1% + 0.025	

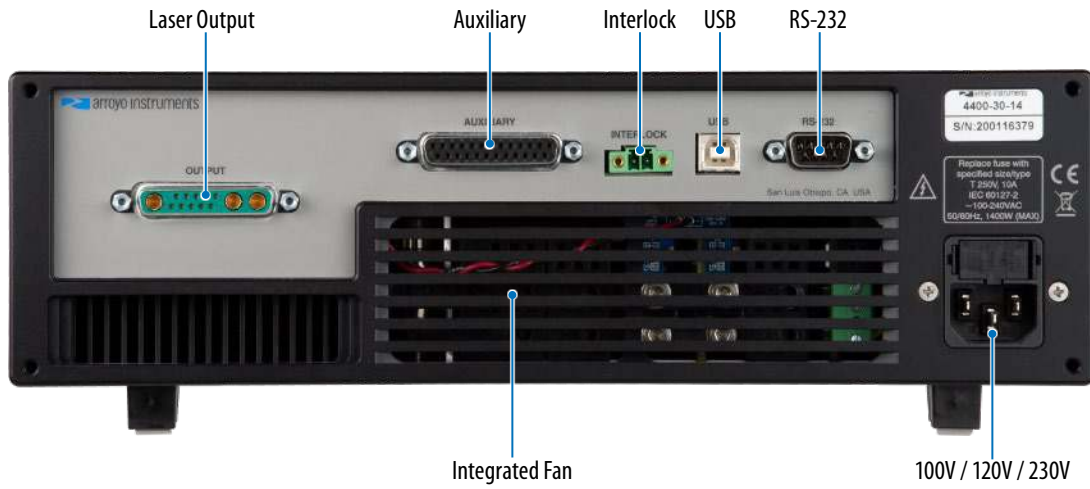
Auxiliary	<b>Temperature Sensor</b>	
	Range (I)	100 - 45,000
	Resolution (I)	1
	Accuracy ( $\pm$ [% reading + mA])	0.5% + 10
	<b>Relay Limits</b>	30VDC, 1A max
<b>Delay I/O +5 Supply</b>	130mA Max (all Signals)	

Limits	<b>Laser Current</b>	
	Resolution (mA)	0.2
	Accuracy ( $\pm$ [% set + % Range])	1% + 0.5%
	<b>Laser Voltage</b>	
	Resolution (V)	0.1
Accuracy ( $\pm$ [% set + V])	1% + 0.2	

General	Display Type	4x20 VFD
	Chassis Interlock Connector	2-pin Phoenix
	Computer Interface	USB 2.0 Full Speed (Type B), RS-232 (DB-9, male)
	Power	90 - 240 V, 50/60 Hz
	Size (H x W x D) [inches (mm)]	3.5 (90) x 12 (305) x 14 (356)
	Weight [lbs (kg)]	13 [5.9]
	Operating Temperature	+10°C to +40°C
	Storage Temperature	-20°C to +60°C

Refer to [4400 Series LaserSource User's Manual](#) for Complete Specification

4400 REAR VIEW  
13W3 LASER OUTPUT



4400 REAR VIEW  
BUS BAR LASER OUTPUT

