



# Infrared Low Noise Diode Laser System

## DLL Series (IR)

Data Sheet



### Overview

The DLL IR series is a family of infrared diode lasers with less than 1% noise that can deliver up to 2500 mW output power. The laser series is available in a wide range for wavelengths from 750nm to 1550nm, and features a compact design, low noise, long operating lifetime, easy operation, and FDA-compliant system with driver. The laser is widely used in measurement, communication, spectrum analysis, and many other applications.

### Features

- Infrared wavelength range
- CW operating mode
- Optical output power 5mW to 2500mW
- Low noise
- Ultra-compact design
- FDA compliant

### Applications

- Communication
- Measurement
- Spectrum analysis

750-830 nm Specifications

Parameter	DLL750	DLL785		DLL793	DLL808		DLL830	
Wavelength	750 nm	785 nm		793 nm	808 nm		830 nm	
Wavelength tolerance	±10 nm	±5 nm	±10 nm	±5 nm	±3 nm		±10 nm	
Output power	>100 mW, >300 mW, >500 mW, >800 mW, >1000 mW, >1500 mW, >2000 mW	>10 mW, >100 mW	>500 mW, >1000 mW, >2000 mW, >2500 mW	>500 mW, >1000 mW, >2000 mW, >2500 mW	>50 mW, >100 mW	>1000 mW, >2000 mW	>50 mW, >100 mW, >120 mW	>500 mW, >1000 mW, >2000 mW
Operating mode	CW							
Transverse mode	Multimode	Near TEM <sub>00</sub>	Multimode	Multimode	Near TEM <sub>00</sub>	Multimode	Near TEM <sub>00</sub>	Multimode
Noise of amplitude (rms, 20Hz-20MHz)	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%
Power stability (rms, over 4 hours)	<2%, <1%, <0.5%	<2%, <1%, <0.5%	<2%, <1%, <0.5%	<2%, <1%, <0.5%	<2%, <1%, <0.5%	<2%, <1%, <0.5%	<2%, <1%, <0.5%	<2%, <1%, <0.5%
M <sup>2</sup> factor	/	<1.5	/	/	~1.5	/	~1.5	/
Beam diameter at aperture (1/e <sup>2</sup> )	~5x8 mm	~4.0 mm	~5x8 mm	~5x8 mm	~3.5 mm	~5x8 mm	~3.0 mm	~5x8 mm
Beam divergence, full angle	<3 mrad	<1 mrad	<3 mrad	<3 mrad	<1.0 mrad	<3 mrad	<1.0 mrad	<3 mrad
Polarization ratio	/	>50:1 Horizontal ±5 degree	/	/	>50:1 Horizontal ±5 degree	/	/	/
Warm-up time	<5 min	<5 min	<5 min	<5 min	<5 min	<5 min	<5 min	<5 min
Pointing stability after warm-up	/	<0.05 mrad	/	/	<0.05 mrad	/	/	/
Operating temperature	10-35°C							
Modulation option	TTL/Analog: 1Hz-1kHz, 1kHz-10kHz, 10kHz-30kHz, 30kHz-100kHz							
Expected lifetime	10,000 hours							
Warranty period	10 months							

Remarks:

- Specifications of the CW laser is based on the laser performance at full power output after the specified warmup period. The stability of output power may change when output power is adjusted at a different power level.
- Specifications are subject to change without notice.

852-905 nm Specifications

Parameter	DLL845	DLL852		DLL860	DLL880		DLL885	DLL905		
Wavelength	845 nm	852 nm		860 nm	880 nm		885 nm	905 nm		
Wavelength tolerance	±10 nm	±10 nm		±10 nm	±5 nm		±5 nm	±10 nm		
Output power	>20 mW, >30 mW	>50 mW, >100 mW, >150 mW	>1000 mW, >1500 mW	>100 mW, >300 mW, >500 mW, >800 mW, >1000 mW	>5 mW, >10 mW	>1000 mW, >1500 mW	>500 mW, >1000 mW, >1500 mW	>30 mW, >50 mW, >70 mW	>100 mW, >200 mW, >400 mW	
Operating mode	CW									
Transverse mode	Near TEM <sub>00</sub>	Near TEM <sub>00</sub>	Multimode	Multimode	Near TEM <sub>00</sub>	Multimode	Multimode	Near TEM <sub>00</sub>	Multimode	
Noise of amplitude (rms, 20Hz-20MHz)	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	
Power stability (rms, over 4 hours)	<2%, <1%, <0.5%	<2%, <1%, <0.5%	<2%, <1%, <0.5%	<2%, <1%, <0.5%	<2%, <1%, <0.5%	<2%, <1%, <0.5%	<2%, <1%, <0.5%	<2%, <1%, 0.5%	<2%, <1%, <0.5%	
M <sup>2</sup> factor	/	<1.5	/	/	~1.5	/	/	/	/	
Beam diameter at aperture (1/e <sup>2</sup> )	~4.0 mm	~4.0 mm	~5x8 mm	~5x8 mm	~3.5 mm	~5x8 mm	~5x8 mm	~3.5 mm	~5x8 mm	
Beam divergence, full angle	<1.0 mrad	<1.0 mrad	<3 mrad	<3 mrad	<1.0 mrad	<3 mrad	<3 mrad	<1.0 mrad	<2.5 mrad	
Polarization ratio	/	>50:1 Horizontal ±5 degree	/	/	>50:1 Horizontal ±5 degree	/	/	/	/	
Warm-up time	<5 min	<5 min	<5 min	<5 min	<5 min	<5 min	<5 min	<5 min	<10 min	
Pointing stability after warm-up	<0.05 mrad	<0.05 mrad	/	/	<0.05 mrad	/	/	/	/	
Operating temperature	10-35°C									
Modulation option	TTL/Analog: 1Hz-1kHz, 1kHz-10kHz, 10kHz-30kHz, 30kHz-100kHz									
Expected lifetime	10,000 hours									
Warranty period	10 months									

Remarks:

- Specifications of the CW laser is based on the laser performance at full power output after the specified warmup period. The stability of output power may change when output power is adjusted at a different power level.
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915-1060 nm Specifications

Parameter	DLL915	DLL940		DLL975	DLL980		DLL1060	
Wavelength	915 nm	940 nm		975 nm	980 nm		1060 nm	
Wavelength tolerance	±5 nm	±5 nm		±10 nm	±10 nm		±5 nm	
Output power	>500 mW, >1000 mW	>100 mW, >200 mW, >250 mW	>500 mW, >1000 mW	>2000 mW	>100 mW, >150 mW, >200 mW	>2000 mW	>50 mW, >100 mW, >200 mW	>500 mW, >1000 mW
Operating mode	CW							
Transverse mode	Multimode	Near TEM <sub>00</sub>	Multimode	Multimode	Near TEM <sub>00</sub>	Multimode	Near TEM <sub>00</sub>	Multimode
Noise of amplitude (rms, 20Hz-20MHz)	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%
Power stability (rms, over 4 hours)	<2%, <1%, <0.5%	<2%, <1%, 0.5%	<2%, <1%, 0.5%	<2%, <1%, 0.5%	<2%, <1%, 0.5%	<2%, <1%, 0.5%	<2%, <1%, 0.5%	<2%, <1%, 0.5%
M <sup>2</sup> factor	/	~1.5	/	/	~1.5	/	/	/
Beam diameter at aperture (1/e <sup>2</sup> )	~5x8 mm	~3.5 mm	~5x8 mm	~5x8 mm	~3.5 mm	~5x8 mm	~3.5 mm	~5x8 mm
Beam divergence, full angle	<3 mrad	<1.0 mrad	<3 mrad	<3 mrad	<1.0 mrad	<3 mrad	<1.0 mrad	<3 mrad
Polarization ratio	/	/	/	/	>10:1 Horizontal ±5 degree	/	/	/
Warm-up time	<5 min	<5 min	<5 min	<5 min	<5 min	<5 min	<5 min	<5 min
Pointing stability after warm-up	/	<0.05 mrad	/	/	<0.05 mrad	/	/	/
Operating temperature	10-35°C							
Modulation option	TTL/Analog: 1Hz-1kHz, 1kHz-10kHz, 10kHz-30kHz, 30kHz-100kHz							
Expected lifetime	10,000 hours							
Warranty period	10 months							

Remarks:

- Specifications of the CW laser is based on the laser performance at full power output after the specified warmup period. The stability of output power may change when output power is adjusted at a different power level.
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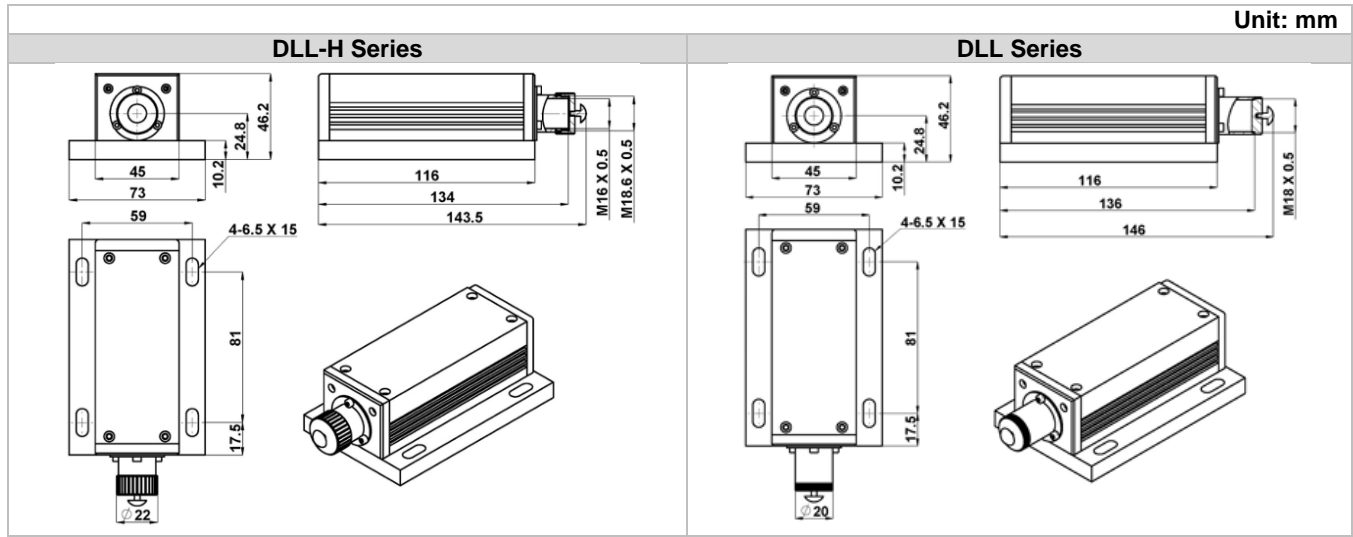
1120-1550 nm Specifications

Parameter	DLL1120	DLL1310		DLL1450	DLL1470	DLL1550	
Wavelength	1120 nm	1310 nm		1450 nm	1470 nm	1550 nm	
Wavelength tolerance	±10 nm	±20 nm		±15 nm	±20 nm	±10 nm	±20 nm
Output power	>100 mW, >300 mW, >500 mW, >800 mW, >1000 mW	>10 mW, >15 mW	>100 mW, >200 mW, >300 mW, >500 mW, >800 mW	>100 mW, >200 mW, >300 mW, >500 mW, >800 mW, >1000 mW	>100 mW, >200 mW, >300 mW, >500 mW	>5 mW, >10 mW	>100 mW, >300 mW, >500 mW, >600 mW
Operating mode	CW						
Transverse mode	Multimode	Near TEM <sub>00</sub>	Multimode	Multimode	Multimode	Near TEM <sub>00</sub>	Multimode
Noise of amplitude (rms, 20Hz-20MHz)	<1%	<1%	<1%	<1%	<1%	<1%	<1%
Power stability (rms, over 4 hours)	<2%, <1%, 0.5%	<2%, <1%	<2%, <1%	<2%, <1%	<2%, <1%	<2%, <1%	<2%, <1%
M <sup>2</sup> factor	/	/	/	/	/	/	/
Beam diameter at aperture (1/e <sup>2</sup> )	~5x8 mm	~1.5 mm	~5x8 mm	~5x8 mm	~5x8 mm	~1.5 mm	~5x8 mm
Beam divergence, full angle	<3 mrad	<2.0 mrad	<3 mrad	<3 mrad	<3 mrad	<3.0 mrad	<3 mrad
Polarization ratio	/	/	/	/	/	/	/
Warm-up time	<5 min	<5 min	<5 min	<5 min	<5 min	<5 min	<5 min
Pointing stability after warm-up	/	/	/	/	/	/	/
Operating temperature	10-35°C						
Modulation option	TTL/Analog: 1Hz-1kHz, 1kHz-10kHz, 10kHz-30kHz, 30kHz-100kHz						
Expected lifetime	10,000 hours						
Warranty period	10 months						

Remarks:

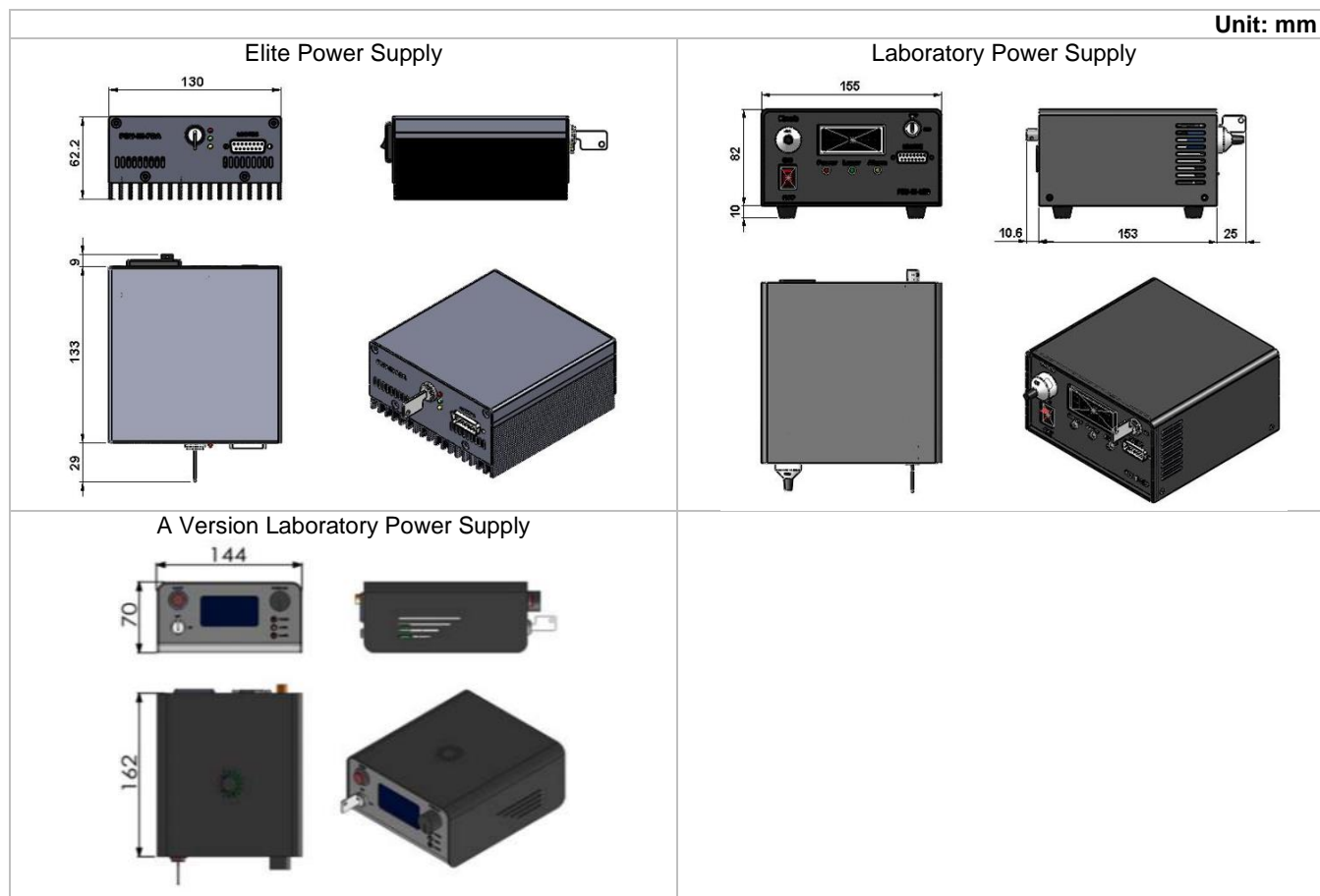
- Specifications of the CW laser is based on the laser performance at full power output after the specified warmup period. The stability of output power may change when output power is adjusted at a different power level.
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DLL Series (IR) Laser Head Dimensions



Parameter	DLL-H Series	DLL Series
Dimensions	143.5(L)×73(W) ×46.2(H) mm <sup>3</sup>	146(L)×73(W) ×46.2(H) mm <sup>3</sup>
Weight	0.7 kg	0.7 kg
Beam height from base plate	24.8 mm	24.8 mm

DLL Series (IR) Power Supply Dimensions



Parameter	Elite Power Supply	Laboratory Power Supply	A Version Laboratory Power Supply
Dimensions	171(L) × 130(W) × 62.2(H) mm <sup>3</sup>	188.6(L) × 155(W) × 92(H) mm <sup>3</sup>	162(L) × 144(W) × 70(H) mm <sup>3</sup>
Weight	1.2 kg	1.5 kg	1.0 kg
Input voltage	85-264VAC	85-264VAC	100-240VAC
Feature	Standard, Frequency 1Hz-30kHz	Adjustable power, Frequency 1Hz-30kHz	Adjustable power, LCD Display, Frequency 30kHz-100kHz

**Ordering Information**

For more information, please contact Lasermate directly at [sales@lasermate.com](mailto:sales@lasermate.com).

Part Number Configuration DLL[1][2][3][4][5][6][7]							
DLL = Laser Model Series	[1] = Wavelength	[2] = Transverse Mode	[3] = Output Power	[4] = Power Supply	[5] = Power Stability	[6] = Noise of Amplitude	[7] = Modulation
	750= 750nm 785= 785nm ... 1120= 1120nm 1310= 1310nm 1450= 1450nm 1470= 1470nm 1550= 1550nm	Blank= Multimode H= Near TEM <sub>00</sub>	5= >5mW 10= >10mW ... 1W= >1000mW 1H= >1500mW 1E= >1800mW 2W= >2000mW 2H= >2500mW	E= Elite Power Supply L= Laboratory Power Supply T= A Version Laboratory Power Supply	2=<2% D=<1% S=<0.5%	1= <1%	0=None T1=TTL 1Hz-1kHz T2=TTL 1kHz-10kHz T3=TTL 10kHz-30kHz T4=TTL 30kHz-100kHz A1=Analog 1Hz-1kHz A2=Analog 1kHz-10kHz A3=Analog 10kHz-30kHz A4=Analog 30kHz-100kHz

Note: The above specifications are subject to change without notice.