



LDD605 Laser Diode Driver ILD605 Injection Locking Controller



The LDD605 laser diode driver is a combination current and temperature controller with sophisticated front-panel menu operation and plain text computer command interface via ethernet and USB. A high-precision low-noise current source drives a wide range of diodes at up to 6 amps. The precision temperature controller, with flexible computer-defined PID response, provides 60 W capacity for a wide range of TEC devices. The LDD605 is designed for use with our MOA series of tapered amplifiers and high-power diodes for lasers and fibre amplifiers.

The ILD605 is a variant of the LDD605 that is enhanced with algorithms to autonomously operate the MOGLabs injection lock amplifier (ILA).

Features

- Low noise diode driver, 6 A at up to 6 V
- Precision temperature controller
- Fully adjustable digital PID temperature servo
- Peltier TEC driver, 60 W
- Current modulation, 40 kHz bandwidth
- HV piezo driver with ramp generator
- External control via USB and ethernet
- Text command

Applications

- Laser cooling and trapping
- Bose-Einstein condensation
- Quantum optics: pump-probe
- Electromagnetic transparency and slow light
- Time and frequency standards
- Laser spectroscopy
- Physics teaching labs

Laser Diode Driver

Specifications LDD605 Rev 0.30

Current

Output current	LDD: 0 – 6A, $\pm 1\text{mA}$ display/set point resolution (ILD: $\pm 0.1\text{mA}$)
Set-point accuracy	<0.5% Error
Noise	TBD
Compliance voltage	Max diode voltage 6V@6A
External modulation	0 – 40kHz (–3dB), 10mA/V, max 10Vp-p

Temperature

Range	-20°C to +80°C, $\pm 0.01^\circ\text{C}$ display/set point resolution
Set-point accuracy	$\pm 5\text{ mK}/^\circ\text{C}$
TEC power	$\pm 5\text{A}$, $\pm 12\text{V}$ (60W)
Stability	$\pm 5\text{mK}/^\circ\text{C}$
Sensor	NTC 10k Ω (provided), reads $^\circ\text{C}$ in all cases

Piezo

Range	0 to 160V
Piezo mod in	SMA connector, $\pm 10\text{V}$ max
Bandwidth	10kHz
Mod out	SMA connector, 2.5V

Computer interface

Ethernet	10/100 TP, RJ45
USB	USB2.0, plug type USB-A
RS232	Optional RS232 interface upon request

Safety Features

Key	Front panel key required for laser operation
Interlock	Rear interlock (3.5mm mono jack) for quick laser current disable
Current limit	Laser current limit to avoid accidental diode over current
Temperature limit	High and low limits on temperature to ensure safe operation

Power and dimensions

IEC input	100/110/120V or 220/240V, 50/60 Hz, 1A
Dimensions	250mm x 79mm x 292mm (WxHxD), 2.4kg

General

Current connector	DE15 high density - 15 pin connector
Temperature connector	DE9 - 9 pin connector
Display type	128 x 64 LCD Graphic Display