

LIMO FP Series (pump)

HIGH-POWER DIODE LASER

LIMO
Lissotschenko Mikrooptik



- High brightness laser for pump applications
- Hermetically sealed laser head in potential-free housing
- SMA905 Plug & Play connector for optical fibres
- Compact dimensions
- Dual temperature sensor (NTC/PT100)

Optical data ¹					
CW – nominal output power (W)	60	60(CMF)	70	70(CMF)	80
Centre wavelength λ (nm)	790-795, 805-810, 880, 888, 915, 940, 975-981 ²				
Tolerance of λ (nm)	$\pm 3 (\pm 2)$ ³				
Spectral width (FWHM) (nm)	< 4				
Temperature drift of λ ⁴ (nm/K)	~0.3, ~0.35, ~0.4				
Fibre data					
Fibre core diameter (μm)	100	200	200	400	400
Numerical aperture	0.22				
Fibre-optic connector	SMA905				
Electrical data					
Typical operation current (start of lifetime) (A)	50	50	50	50	50
Max. Operation current (start of lifetime) (A)	53	53	53	53	53
Max. Operation current (end of lifetime) (A)	64	64	64	64	64
Typical threshold current (A)	5 – 10				
Typical efficiency (%)	33	33	39	39	44
Typical slope efficiency (W/A)	1.2 - 1.9				
Operation voltage (V)	< 4				
Reverse voltage	0				
Thermal conditions					
Diode heat sink temperature ⁵ (°C)	+15...+30				
Storage temperature (°C)	-20...+60				
Recommended heat sink capacity (W)	> 175	> 175	> 165	> 165	> 155
Recommended heat sink thermal resistance (K/W)	< 0.1				
Chiller flow capacity ⁶ (l/min)	5				
Water pressure ⁶ (bar)	4				
Water temperature ⁶ (°C)	16				
Other specifications					
Expected lifetime ⁷ (hours)	20,000				
RoHS 2002/95/EC and CE compliant	YES				
Dimensions of laser head water cooled [TE cooled] (mm)	137x119x59 [137x119x46]				
Weight laser head water cooled [TE cooled] (g)	1500 [2400]				
External radiation filter	Filter 1600.014, HR @ 1050-1130nm >99.0% (s+p pol.) or Filter 1600.036, HR @ 1025-1080nm >99.0% (s+p pol.) Other filters on request				
The 60W 200 μm and 70W 400 μm modules are Cladding Mode Free fibre coupled lasers. >99% power out of the CMF-fibre core; the laser module has to be used in combination with a LIMO-CMF-fibre.					

¹Optical data @ 25°C diode heat sink temperature ²Other wavelength on request, ³optional, ⁴Depending on wavelength, ⁵Measured by NTC/PT100 on LIMO connector, ⁶Water cooled module, ⁷According ISO 17526:2003(E);

Optional

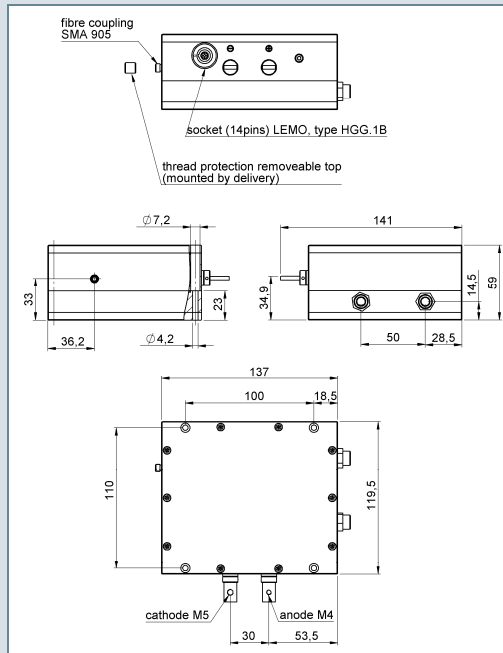
Pilot beam	
Pilot beam output power (mW)	> 1
Pilot beam wavelength (nm)	635 \pm 5
Pilot beam voltage (V)	3-5
Pilot beam current (mA)	< 120
Monitor diode	
Operation voltage (V _{DC})	5
Monitor diode signal (V)	0-2

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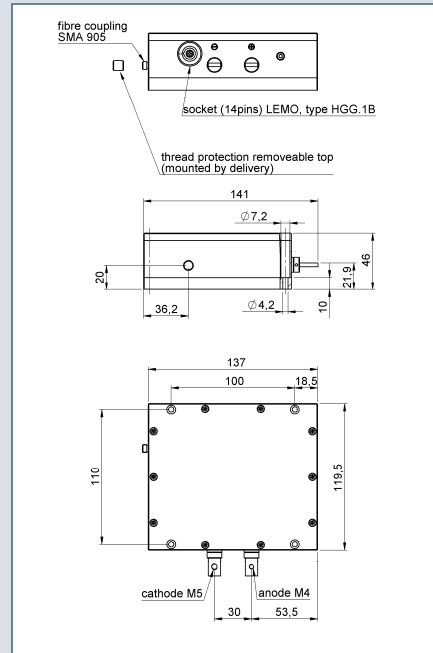
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HIGH-POWER DIODE LASER



Water cooled



TE cooled

Product name identification:

LIMO -F -DL - (pump)

Power	Fibre core diameter	Wavelength	Wavelength tolerance	Heat removal	Feature monitor diode	Feature pilot laser	Feature filter
60	100	790,791,792, 793,794,795	T2=±2nm	C1= TEC ready	M0= no monitor diode	P0= no pilot laser	F0 = no filter
60(CMF)	200	805,806,807, 808,809,810	T3=±3nm	C2= macro channel water cooling	M3= monitor diode	P2= pilot laser	F14 = filter 1600.014
70	400	880, 888					F36 = filter 1600.036
70(CMF)		915, 940					
80		975,976,977, 978,979,980, 981					

Accessories

- Fibre LIMO-SMA905-F, 1.5m or 3m
- LDD60-5 diode driver with TEC-cooler
- Integrated Volume Holographic Grating for wavelength stabilization
- Different beam shaping optics (focussing, collimating, fibre-fibre) available
- Installation service and personal introduction on request
- Turn-key systems available
- Customized laser modules and fibres on request

Example: LIMO80-F400-DL976-T2C1M0P0F36 (pump)

Considerations in Safety and Operation

This is a laser class IV product regarding CDRH regulations and a Laserklasse 4 product regarding DIN:EN60825-1. The laser light emitted from this laser diode is invisible and/or visible and may be harmful to the human eye. Avoid looking directly into the laser diode, into the collimated beam along its optical axis, or directly into the fibre when the device is in operation.

ESD PROTECTION – Electrostatic discharge is the primary cause of unexpected laser diode failure. Take extreme precaution to prevent ESD. Use wrist straps, grounded work surfaces and rigorous antistatic techniques when handling laser diodes.

Operating the laser diode outside of its maximum ratings may cause device failure or a safety hazard. Power supplies used with the component must be employed such that the maximum peak optical power cannot be exceeded.

Output powers in excess of specification will accelerate device aging.

Operation at higher temperatures will accelerate device aging.

Do not use thermal contact paste! LIMO provides appropriate carbon foil

All data provided are typically measured with a diode heat sink temperature of 25 °C. All measurements, except for CMF-laser, are made with a LIMO reference fibre 100/140, 200/280 µm or 400/480 µm, length 1.5 m, and non AR coated. Copyright © 2009 LIMO GmbH. All rights reserved. All LIMO products are patent pending. Subject to change without notice. May 2009

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