monocrom
LASER DIODE DEVICES

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Product Division	LDBA **Laser Diode Bar Assemblies**
Product	**LB-80XYY-ZZQCW series**
Description	**Diode laser bar stacks for CW and QCW.** **Water cooled or conductive mount - Without micro-channels.**
Main Features	**Solder-free diode bar mounting technology, exclusive from MONOCROM S.L.** **The main features of the solder free concept of the clamp-mounting technology are:** ● **Long lifetime,** due to the absence of the mechanical stress caused by the soldering process at high temperature. ● **Minimum "smile",** less than 0.5 mm. ● **High reliability in pulsed conditions,** since the clamped bars do no suffer the same fatigue effect than the soldered ones due to the thermal cycle. ● **Small thermal resistances,** owing to the reduction of the contact resistance between electrodes and laser bar. No micro channels are needed to reach low thermal resistances. ● **Large storage temperature interval,** tested from –60ºC to + 85ºC.
Some Applications	● **Extreme Environmental conditions** –aeronautics, space, automotion– ● **Pulsed-Energy mode** –medicine, aesthetic, laser pumping– ● **Material processing** –fibre coupling, plastic and metallic industry, research–
Picture(s)	

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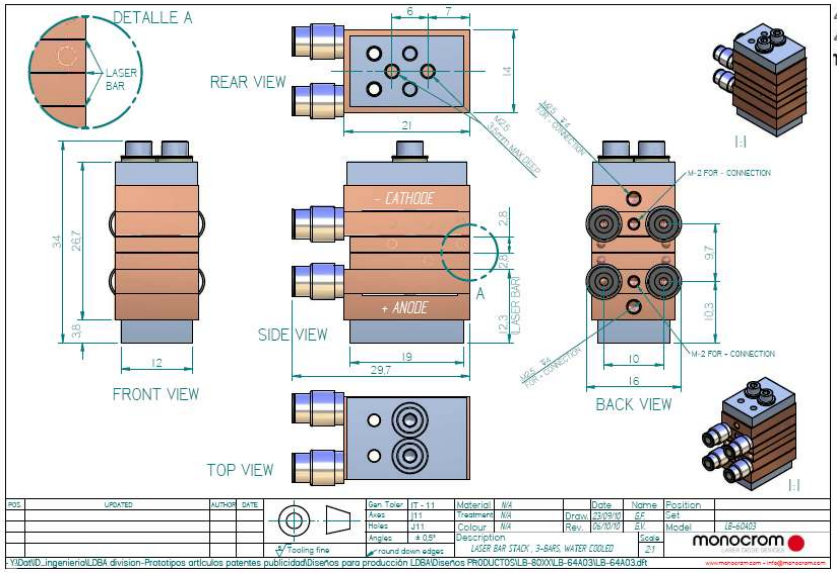
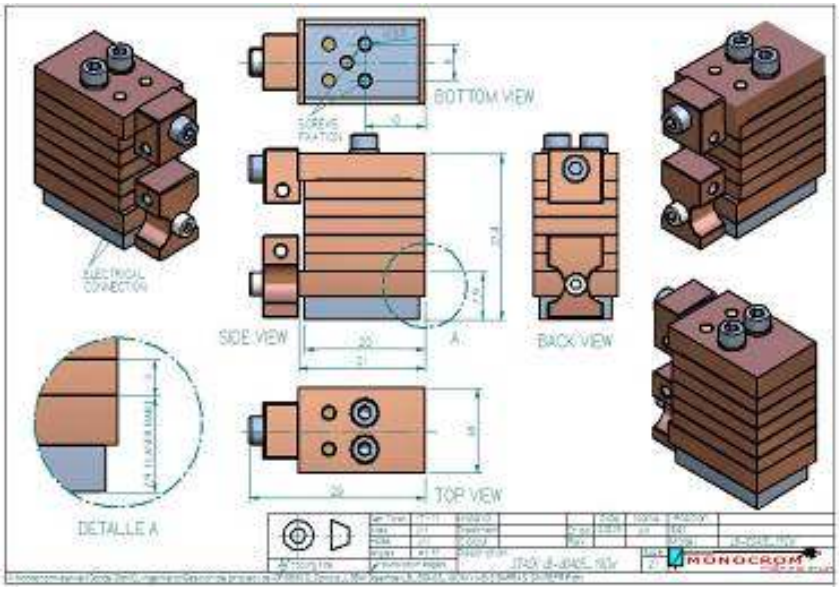
Outline



(Example of a three-bar stack, water cooling)



(Example of a five-bar stack, conductive cooling)

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LB-80XYY-ZZQCW | GENERAL TECH SPECIFICATIONS

Product number	Bars 808nm; X: Cooling, P passive A active; YY: Nº of bars, from 02 to 10; ZZ: Nº of emitters; QCW operation (CW only some water-cooled models); With or without fast and/or slow axis collimation.					
	LB-80PYY-19QCW	**LB-80AYY-19QCW**	**LB-80PYY-49QCW**	**LB-80AYY-49QCW**	**LB-80PYY-60QCW**	**LB-80AYY-60QCW**
Nº of emitters in the laser bar[1]	19	19	25 - 49	25 - 49	60 - 75	60 - 75
Laser Bar geometry[1]	1 cm wide em. size:100µm em.spacing:500µm	1 cm wide em.size:150µm em.spacing:500µm	1 cm wide em. size:100/200µm em.spac.:200/400µm	1 cm wide em.size:100/200µm em.spac.:200/400µm	1 cm wide em.size:110/150µm em.spac.:130/160 µm	1 cm wide em.size:110/150µm em. Spac.:130/160 µm
Pulse length	Up to 500 ms	No-limitations	Up to 100 ms	Up to 500 ms	Up to 60 ms	Up to 200 ms
Maximum peak power, Pop[2]	60W/bar up to 600 total	60W/bar up to 600 total CW: 45W/bar up to 450W	70 W/bar up to 700W total	70 W/bar up to 700W total CW: 50W/bar up to 500W	150W/bar up to 1500Wtotal	150W/bar up to 1500Wtotal
Pulse energy @ 20ms	1,0 J/bar up to 10J total (Imax=60A)	No-limitations	1,2 J/bar up to 12J total (Imax=75A)	1,2 J/bar up to 12J total (Imax=75A)	2,8 J/bar up to 28J total (Imax=160A)	2,8 J/bar up to 28J total (Imax=160A)
Pulse energy @ 60ms	3 J/bar up to 30 J total (Imax=60A)	No-limitations	2 J/bar up to 20 J total (Imax=50A)	3,5 J/bar up to 35J total (Imax=75A)	3 J/bar up to 30 J total (Imax=75 A)	5 J/bar up to 50J total (Imax=110 A)
Pulse energy @ 100ms	5 J/bar up to 50 J total (Imax=60A)	No-limitations	2 J/bar up to 20J total (Imax=30A)	6 J/bar up to 60 J total (Imax=75A)	-	5,5 J/bar up to 50J total (Imax=80 A)
Pulse energy @ 200ms	10 J/bar up to 50 J total (Imax=60A)	No-limitations	-	9 J/bar up to 90 J total (Imax=60 A)	-	5,5 J/bar up to 65J total (Imax=50A)
Op. current (for max. power), Iop	60-65 A	60-65 A CW:50-55A	75-80 A	75-80 A CW:60-65A	150-160 A	150-160 A
Threshold current, typical[1]	6 – 9 A	6 – 9 A	12 A	12 A	20 A	20 A
Duty cycle[3]	<10 %	<50 %	< 10%	< 20 %	< 10 %	< 20%
Center wavelength[4]	800-810 nm					
Wavelength shift @ max. pulse E	<10 nm					
Wavelength Temp.Coefficient	0,27-0,3 nm/ºC					
Voltage @ Iop	1,6-2,1 V per bar up to 20 V total with 10 bars stacked (Base to + voltage)					
ΔV/I[1]	2 mV/A per bar up to 20 mV/A total with 10 bars stacked					
Smile	< +/- 0,3 µm; per bar					
Thermal resistance[5]	From 0,3ºC/W per bar using water-cooled stacks					
Spot size without optics	As requested					
Spot size with optics	As requested					
Beam divergence[1]	Typical high divergence without collimation optics (~30º-fast axis; 10º-slow axis)					
Beam divergence with FAC-SAC collimation	FAC: FA(3-6mrad) SA 10°) FSAC:FA(3-6mrad) SA (3-5°)	FAC: FA(3-6mrad) SA 10°	FAC: FA(3-6mrad) SA 10°	FAC: FA(3-6mrad) SA 10°	FAC: FA(3-6mrad) SA 10°	FAC: FA(3-6mrad) SA 10°
Cooling	Conductive or with water channels (TAP water (distilled water with 5% ethylenglycol is recomm.))					
Water pressure	2-3 bars					
Water flow	> 0,3 l/min					
Operation temperature[6]	<25ºC. If wet atmosphere, T>15ºC is recommended					
Size WxLxH (mm)	Depends on number of bars and type of cooling					
Electrical connections	Fast connectors (Pin ∅2x10mm), or threads M2					
Water connections	Water flow outlet for Ø3 mm tube					
Water tubes	Rigid tube Øint.2mm / Øext.3mm					

Laser class product (EN-60825)	4
Expected lifetime < 1ms	10^9 pulses
Expected lifetime >1ms	10^8 pulses

Device sensitive to ESD & dust contamination => Handling under clean area conditions advised.

Parametrical and dimensional specifications can be modified upon request.

(1) These values could change depending on the type of laser bars chosen by customer.
(2) Maximum peak power is not available for the complete pulse duration range. The operation current must be decreased when pulse duration is increased, according to the energy range specified in the table. Higher powers are also available on request
(3) Higher values could be also available on request
(4) Wavelengths from 780 to 1060 nm also available on request.
(5) The module should be cooled properly to achieve these values
(6) Operation temperature could be increased for lower DC

NEW: Diode bars up to 270W/bar are also available. Laser stacks with more than 2500W can be provided