

JDL-BAB-30-19-940-TE-60-1.5

## High-power diode laser bars: 940 nm, 60 W cw

## Features

- High laser power
- High efficiency
- Long lifetime, high reliability
- Excellent beam characteristics

## **Applications**

- Pumping of solid-state lasers and fiber lasers
- Industrial, scientific and medical systems
- Printing industry
- Defense and security

## High-power diode laser bars | 940 nm, 60 W cw JDL-BAB-30-19-940-TE-60-1.5

Specifications JDL-BAB-30-19-940-TE-60-1.5

Optical Output Power         Power         60           Operation Mode         cw, switched           Power Modulation         100           Geometrical         19           Number of Emitters         19           Emitter Width         W         145         150         155           Emitter Pitch         P         500         Filling Factor         F         30         Sent Filling Factor         F         30	Operation*	Symbol	Min	Nom	Max	Unit
Operation Mode         cw, switched           Power Modulation         100           Geometrical         19           Emitter Width         W         145         150         155           Emitter Pitch         P         500         Filling Factor         F         30         155           Bar Width         B         9600         9800         10000         1000         1520 <td>Wavelength (cw)</td> <td>λ</td> <td>935</td> <td>938</td> <td>941</td> <td>nm</td>	Wavelength (cw)	λ	935	938	941	nm
Operation Mode         cw, switched           Power Modulation         100           Geometrical         19           Number of Emitters         19           Emitter Width         W         145         150         155           Emitter Pitch         P         500	Optical Output Power	Pont		60		W
Geometrical           Number of Emitters         19           Emitter Width         W         145         150         155           Emitter Pitch         P         500         F           Filling Factor         F         30         10000           Bar Width         B         9600         9800         10000           Cavity Length         L         1480         1500         1520           Thickness         D         115         120         125           Electro Optical Data*         T         27         30           Fast Axis Divergence (FWHM)         θ₁         27         30           Fast Axis Divergence at 60 W (FWHM)         θ₁         5         7           Slow Axis Divergence at 60 W (FWHM)         θ₁         7         9           Pulse Wavelength         λ         929         932         935           Spectral Bandwidth (FWHM)         Δλ         3         5           Slope Efficiency***         η         1.0         1.1           Threshold Current         I₁         7         9           Operating Current         I₂         62         69           Operating Voltage         V₂<	Operation Mode			cw, switched		
Number of Emitters   19	Power Modulation			100		%
Emitter Width         W         145         150         155           Emitter Pitch         P         500         500           Filling Factor         F         30         30           Bar Width         B         9600         9800         10000           Cavity Length         L         1480         1500         1520           Thickness         D         115         120         125           Electro Optical Data*         Fast Axis Divergence (FWHM)         θ1         27         30           Fast Axis Divergence (FWHM)         θ1         47         51           Slow Axis Divergence at 60 W (FWHM)         θ1         5         7           Slow Axis Divergence at 60 W**         θ1         7         9           Pulse Wavelength         λ         929         932         935           Spectral Bandwidth (FWHM)         Δλ         3         5           Slope Efficiency***         η         1.0         1.1           Threshold Current         1         7         9           Operating Current         1         0         62         69           Operating Voltage         V <sub>op</sub> 1.7         1.9 <tr< td=""><td>Geometrical</td><td></td><td></td><td></td><td></td><td></td></tr<>	Geometrical					
Emitter Pitch         P         500           Filling Factor         F         30           Bar Width         B         9600         9800         10000           Cavity Length         L         1480         1500         1520           Thickness         D         115         120         125           Electro Optical Data*         Fast Axis Divergence (FWHM)         θ₁         27         30           Fast Axis Divergence at 60 W (FWHM)         θ₁         5         7           Slow Axis Divergence at 60 W (FWHM)         θ₁         7         9           Pulse Wavelength         λ         929         932         935           Spectral Bandwidth (FWHM)         Δλ         3         5           Slope Efficiency***         η         1.0         1.1           Threshold Current         I₁h         7         9           Operating Current         I₂h         7         9           Operating Voltage         V₀p         1.7         1.9           Series Resistance         R₃         3         5           Degree of TE Polarization         α         98	Number of Emitters			19		
Filling Factor   F   30	Emitter Width	W	145	150	155	 μm
Bar Width         B         9600         9800         10000           Cavity Length         L         1480         1500         1520           Thickness         D         115         120         125           Electro Optical Data*         Fast Axis Divergence (FWHM)         9           Fast Axis Divergence**         θ <sub>L</sub> 47         51           Slow Axis Divergence at 60 W (FWHM)         θ <sub>II</sub> 5         7           Slow Axis Divergence at 60 W**         θ <sub>II</sub> 7         9           Pulse Wavelength         λ         929         932         935           Spectral Bandwidth (FWHM)         Δλ         3         5           Slope Efficiency***         η         1.0         1.1           Threshold Current         I <sub>In</sub> 7         9           Operating Current         I <sub>Iop</sub> 62         69           Operating Voltage         V <sub>op</sub> 1.7         1.9           Series Resistance         R <sub>s</sub> 3         5           Degree of TE Polarization         α         98	Emitter Pitch	P		500		μm
Cavity Length	Filling Factor	F		30		<del></del> %
Thickness   D   115   120   125	Bar Width	В	9600	9800	10000	μm
Electro Optical Data*         Fast Axis Divergence (FWHM) $\theta_{\perp}$ 27       30         Fast Axis Divergence** $\theta_{\perp}$ 47       51         Slow Axis Divergence at 60 W (FWHM) $\theta_{\parallel}$ 5       7         Slow Axis Divergence at 60 W** $\theta_{\parallel}$ 7       9         Pulse Wavelength $\lambda$ 929       932       935         Spectral Bandwidth (FWHM) $\Delta\lambda$ 3       5         Slope Efficiency*** $\eta$ 1.0       1.1         Threshold Current $I_{th}$ 7       9         Operating Current $I_{top}$ 62       69         Operating Voltage $V_{op}$ 1.7       1.9         Series Resistance $R_s$ 3       5         Degree of TE Polarization $\alpha$ 98	Cavity Length	L	1480	1500	1520	 μm
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	Thickness	D	115	120	125	 μm
Fast Axis Divergence** $\theta_{\perp}$ 47 51  Slow Axis Divergence at 60 W (FWHM) $\theta_{\parallel}$ 5 7  Slow Axis Divergence at 60 W** $\theta_{\parallel}$ 7 9  Pulse Wavelength $\lambda$ 929 932 935  Spectral Bandwidth (FWHM) $\Delta\lambda$ 3 5  Slope Efficiency*** $\eta$ 1.0 1.1  Threshold Current $l_{th}$ 7 9  Operating Current $l_{tp}$ 62 69  Operating Voltage $v_{tp}$ 1.7 1.9  Series Resistance $v_{tp}$ 8	Electro Optical Data*					
Slow Axis Divergence at 60 W (FWHM)   $\theta_{\parallel}$   $\theta_{\parallel$	Fast Axis Divergence (FWHM)	$\overline{\theta_{\perp}}$		27	30	0
Slow Axis Divergence at 60 W** $\theta_{\parallel}$ 7       9         Pulse Wavelength $\lambda$ 929       932       935         Spectral Bandwidth (FWHM) $\Delta\lambda$ 3       5         Slope Efficiency*** $\eta$ 1.0       1.1         Threshold Current $I_{th}$ 7       9         Operating Current $I_{sp}$ 62       69         Operating Voltage $V_{op}$ 1.7       1.9         Series Resistance $R_s$ 3       5         Degree of TE Polarization $\alpha$ 98	Fast Axis Divergence**	$\overline{\theta_{\perp}}$		47	51	0
Pulse Wavelength   λ   929   932   935     Spectral Bandwidth (FWHM)   Δλ   3   5     Slope Efficiency***   η   1.0   1.1     Threshold Current   I <sub>th</sub>   7   9     Operating Current   I <sub>op</sub>   62   69     Operating Voltage   V <sub>op</sub>   1.7   1.9     Series Resistance   R <sub>s</sub>   3   5     Degree of TE Polarization   α   98	Slow Axis Divergence at 60 W (FWHM)	$\theta_{\parallel}$		5	7	0
Spectral Bandwidth (FWHM)         Δλ         3         5           Slope Efficiency***         η         1.0         1.1           Threshold Current $I_{th}$ 7         9           Operating Current $I_{sp}$ 62         69           Operating Voltage $V_{op}$ 1.7         1.9           Series Resistance $R_s$ 3         5           Degree of TE Polarization         98	Slow Axis Divergence at 60 W**	θ		7	9	0
Slope Efficiency***         η         1.0         1.1           Threshold Current         I <sub>th</sub> 7         9           Operating Current         I <sub>to</sub> 62         69           Operating Voltage         V <sub>op</sub> 1.7         1.9           Series Resistance         R <sub>s</sub> 3         5           Degree of TE Polarization         98	Pulse Wavelength	λ	929	932	935	nm
Threshold Current         I <sub>th</sub> 7         9           Operating Current         I <sub>op</sub> 62         69           Operating Voltage         V <sub>op</sub> 1.7         1.9           Series Resistance         R <sub>s</sub> 3         5           Degree of TE Polarization         98         -         -         -	Spectral Bandwidth (FWHM)	Δλ		3	5	nm
Operating Current  Operating Voltage  Vop  Series Resistance  Degree of TE Polarization  Degree Operating Voltage  Vop  1.7  1.9  1.9  5.5  9.8  9.8	Slope Efficiency***	η	1.0	1.1		W/A
Operating Voltage V <sub>op</sub> 1.7 1.9  Series Resistance R <sub>s</sub> 3 5  Degree of TE Polarization 98	Threshold Current	I <sub>th</sub>		7	9	A
Series Resistance Rs 3 5 Degree of TE Polarization 98	Operating Current	I <sub>op</sub>		62	69	A
Degree of TE Polarization a 98	Operating Voltage	V <sub>op</sub>		1.7	1.9	V
<del></del>	Series Resistance	R <sub>s</sub>		3	5	mΩ
EO Conversion Efficiency*** $\eta_{tot}$ 56 <b>62</b>	Degree of TE Polarization	α	98			%
	EO Conversion Efficiency***	n <sub>tot</sub>	56	62		%

 $<sup>^*</sup>$  Mounted on a heat sink with Rth = 0.7 K/W, coolant temperature 25 °C, operating at nominal power

Note: Nominal data represents typical values.

Safety Advice: Laser bars are the active components in high-power diode lasers in accordance to IEC standard class 4 laser products.

As delivered, laser bars cannot emit any laser beam. The laser beam can only be released if the bars are connected to a source of

electrical energy. In this case, IEC-Standard 60825-1 describes the safety regulations to be taken to avoid personal injury.



<sup>\*\*</sup> Full width at 95 % power content

 $<sup>^{\</sup>star\star\star} \text{ Item may change upon notice and acceptance by Jenoptik, due to future improvements of technology or processing}$