SPECIFICATIONS

Direct Modulation Ultra Narrow Linewidth Laser Box

DL-BZ1-CLSxxxB-yy

www.maxphotonics.com

A. PRODUCT DESCRIPTION

The DL-BZ1-CLSxxxB-yy is a series of ultra narrow linewidth laser designed for applications in optical metrology & instrumentation and optical gas & chemical sensing, requiring narrow spectral linewidth, excellent SMSR, power stability, and a very highly wavelength stable laser output. The DL-BZ1-CSxxxB-yy is complete with a 14-pin BTF package laser CLSxxxB, a temperature controller and a built-in current driver capable for CW driving, digital or analog modulation input, which can be customized with various options to meet your specific needs. It is available over a wide wavelength range across the O, E, S, C and L bands.

B. FEATURES

CW optical power of 3 to 20mW
Typical linewidth of 5kHz
SMSR >35dB
Wavelength availability 1260 to 1670nm
Integrated optical isolator (Optional)
FC receptacle
Built-in current driver and temperature controller
Single +5V power supply (optional power adapter)
Over temperature protection and internal PCB temperature monitor
Analog intensity modulation upto 20MHz (transconductance amplifier performance)
Pulse or digital modulation upto 200MHz
Compact size
RoHS compliance

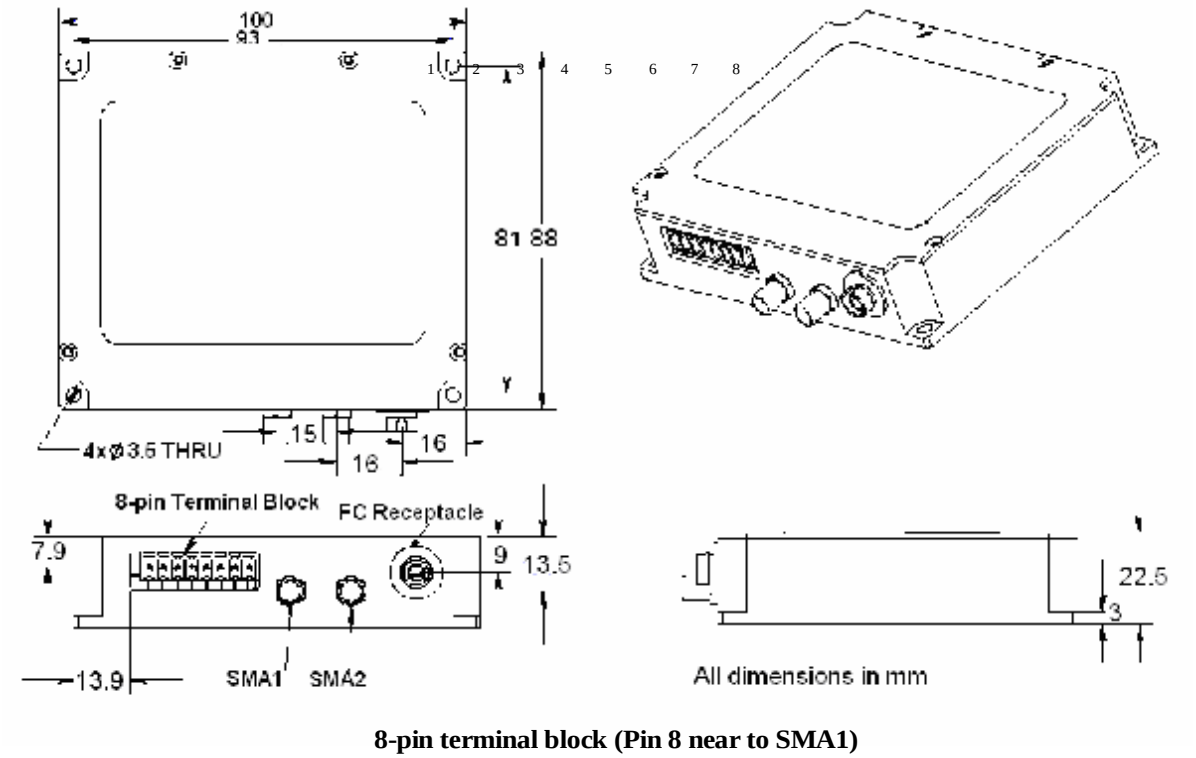
C. APPLICATIONS

OTDR
Optical measuring instrumentation
Optical gas and chemical sensor

D. PHYSICAL DIMENSIONS AND MECHANICAL SPECIFICATION

Dimension: L100 x W88 x H22.5 mm
Enclosure: Metal Case
Optical output: FC receptacle
Cooling: Air-cooled.
Electronic interface: 8-pin terminal block

E. PIN ASSIGMENT AND FUNCTION



8-pin terminal block (Pin 8 near to SMA1)

Pin No.	Symbol	Power/Control /Monitor	Analog /Digital	Input /Output	Description
1	P_{GND}	P			Power Supply Ground
2	V_S	P			+5V d.c.
3	OVRT	M	D	O	To report PCB over temperature and internal self-protection shutdown in operation (Active high)
4	T_{MON}	M	A	O	To monitor the temperature of PCB
5	N/C				
6	N/C				
7	LO_EN	C	D	I	To enable Light output (active low or no connection to enable laser driver)
8	A_{GND}				Signal Ground for Control and Monitor Signals

F. ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Condition	Min	Max	Unit
Operating temperature (chassis)	T_{op}	I_{op}	0	60	°C
Operating Relative Humidity	RH	I_{op}		85	%
Storage temperature	T_{stg}	Unbiased	-40	85	°C
Input current	I_s			6	A
Input Power Supply	V_S			6	V

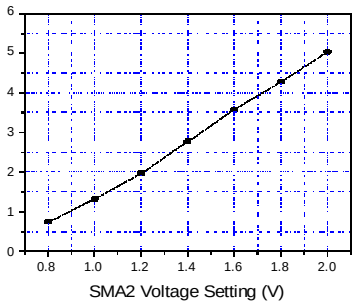
G. ELECTRICAL SPECIFICATIONS [1]

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Input Power Supply	V_S		4.75	5	5.5	V
Input Current [2]	I_S				2.5	A
Total Power consumption [2]	P_S				12.5	W
Over Temperature	OVRT	Open-drain digital output with internal 1K pull-up to 3V for VH and 8mA current sink for VL				
	V_{OL}	Normal	0		0.45	V
	V_{OH}	Over-temp	2.0		3.0	V
Internal PCB Temperature Monitor	T_{MON}	Analog voltage: T_{MON} = 395mV + (6.2mV/°C x T), T = PCB temperature in °C				mV
Voltage	V_{OUT}	R_X = infinite	0		2.5	V
Output Impedance	R_{OUT}			150		&
Source Current	$\|I_{OUT}\|$	$V_{OUT}1$ = 2.5V			4	mA
Light Output Enable	LO-EN	Digital input with internal 10K pull-down for light output enable at logic low or no connection				
	V_{IL}	Normal	0		1	Normal
	V_{iH}	Over-temp	2.5		3.3	Over-temp

1) Unless otherwise specified, tests are performed at T_{op} = 25°C
2) Depending on product selection

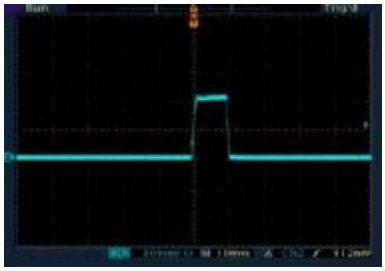
Operating mode [3]	Operation Setting	
	SMA1 connector (50&)	**SMA2 connector (50&)**
CW	Logic High, 1.7V δ V_{IH} δ 3.3V Recommended setting: 2V	DC Voltage (User to set optical peak power through DC voltage to SMA2)
Digital modulation [4]	External Trigger Input (CMOS/TTL compatible), 0 δ V_{IL} δ 0.5V and 1.7V δ V_{IH} δ 3.3V	DC Voltage (User to set optical peak power through DC voltage to SMA2)
Analog modulation [4]	Logic High, 1.7V δ V_{IH} δ 3.3V Recommended setting: 2V	Transconductance amplifier operating on positive polarity analog input signal

[3] There will be no optical output power if SMA1 or SMA2 is left unconnected.
[4] Pre-bias setting on laser can be factory preset. Please specify the amount of pre-set bias (in terms of X% of optical power). Note: Factory default setting is zero.



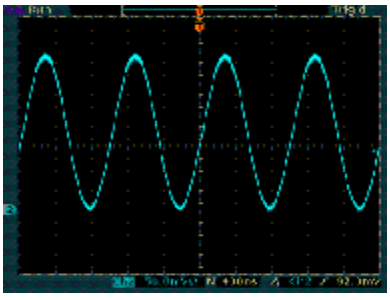
Optical power vs SMA2 voltage setting

Digital modulation:



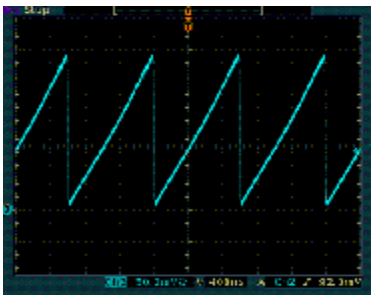
SMA1: Pulse waveform
Frequency= 100kz
Amplitude= 2V SMA2:
DC voltage 2V

Analog modulation



SMA1: Logic high (V_{IH} = 2V)
SMA2: Sine wave
Frequency: 1MHz
Amplitude= 0.3 to 2.3V

Analog modulation



SMA1: Logic high (V_{IH} = 2V)
SMA2: Ramp wave
Frequency: 1MHz
Amplitude= 0.3 to 2.3V

H. OPTICAL SPECIFICATIONS

Parameter	Symbol	Min	Typ	Max	Unit
Output stability [5] 1 hour	Stb			± 0.03	dB
8 hour				± 0.1	dB

[5] After one hour of warm-up for CW operation

14-Pin Butterfly package CLSxxxB	Min Power (mW)	Peak wavelength (nm)	Side Mode Suppression Ratio (dB)	Linewidth (kHz)
CLS051B-S1260	5	1260±2	>35dB	<50
CLS051B-S1383	5	1383±2	>35dB	<50
CLS101B-S1550	10	1550±2	>35dB	<50
CLS051B-S1648	5	1648±2	>35dB	<50
CLS051B-S1665	5	1665±2	>35dB	<50

The full optical performance of the DL-BZ1-CLSxxxB can be found in Maxphotonics standard 14-pin Butterfly package CLSxxxB series individual specification.
Please contact Maxphotonics Ltd for further information.

I. ORDERING INFORMATION

Please use the following part code system to order products.

DL-BZ1-CLSxxxB-yy

Part code:
1) CLSxxxB refers to Maxphotonics standard 14-pin Butterfly package. Refer to the summary in section H for the code number.
2) yy denotes the factory laser optical power pre-bias setting:
00= Zero bias (factory default)
zz= Pre-bias 01 to zz% (eg. 05 denotes 5% optical power pre-bias)

J. REVISION CONTROL

Authorized Personnel	Rev	Description of Change	Date
OTK	A	Initial: Prelim Production Release	8 June 2007