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SPECIFICATIONS

Superluminescent LED Source (with Integrated Optical Circulator)

DL-BP1-1501A

DenseLight Semiconductors reserves the right to make product design or specifications changes without notice.

A. PRODUCT DESCRIPTION

The DenseLight DL-BP1-1501A is a series of electronics driver integrated superluminescent light emitting diode (SLED) broadband source for fiber optic sensor, optical test instrument and optical coherence tomography. This DL-BP1-1501A consists of a DenseLight SLED in a standard 14-pin butterfly package, a temperature controller and a built-in current driver capable for CW driving and digital modulation input. The SLED light source also features USB control interface and integrated optical circulator.

B. FEATURES

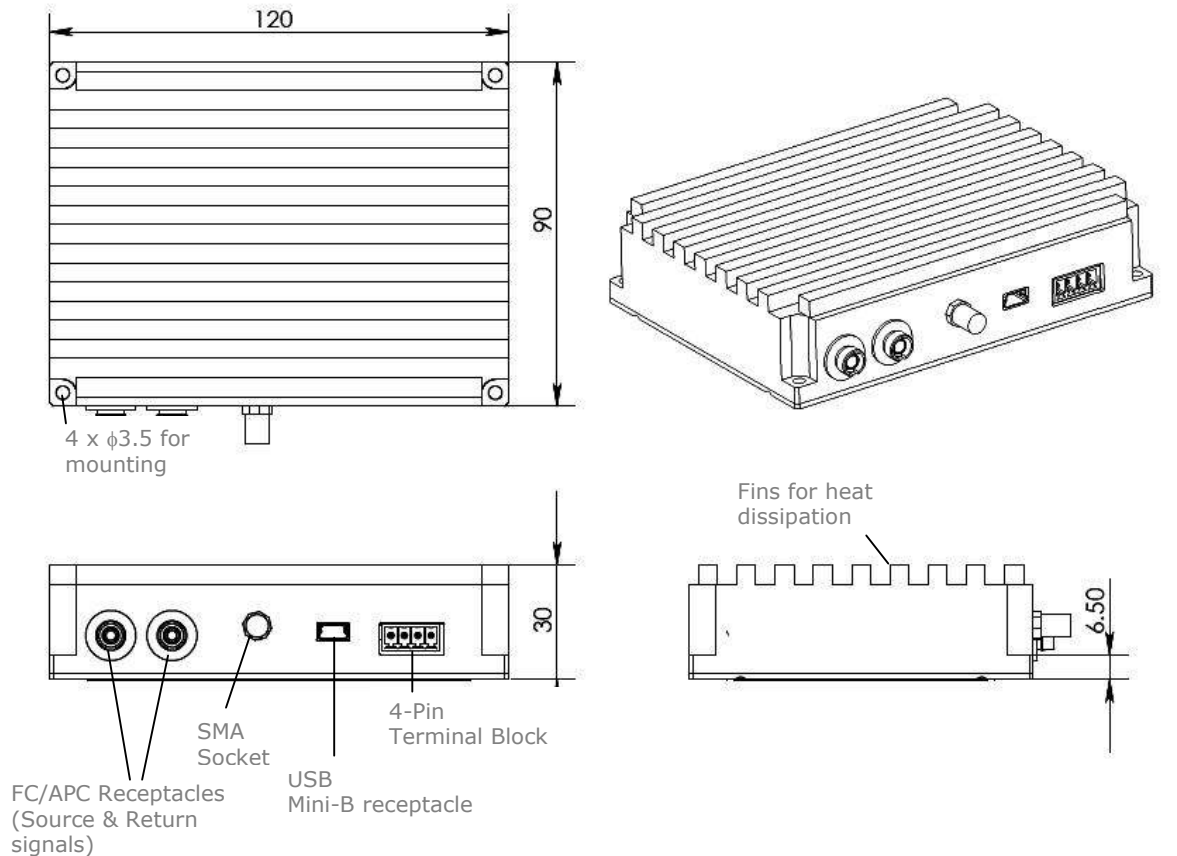
- Optical power of >12mW
- 3dB spectral width of >70nm
- Output power selectable from 0 to full range (via USB)
- Mode of operation: a) CW operation (APC/ACC mode); b) pulse operation (ACC mode only)
- Dual FC/APC receptacle outputs (source and return signals with internal circulator)
- External digital modulation (LVTTTL, rise/fall time < 0.1μsec)
- Single +5V power supply
- Operating case temperature 0 to 65 °C
- Over temperature protection and internal temperature monitor
- High wall-plug efficiency
- Compact size (L120 x W90 x H30 mm)
- Telcordia Qualified SLED (GR-468-CORE)

C. APPLICATIONS

- Optical Test Instrument
- Fiber Optic Sensors
- Fiber Optic Communications
- Optical Coherence Tomography
- Biomedical Imaging Device

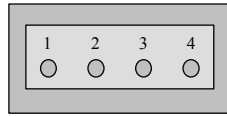
D. PHYSICAL DIMENSIONS AND MECHANICAL SPECIFICATION

Dimension: L120 x W90 x H30 mm
 Enclosure: Metal Case
 Cooling: Air-cooled
 Optical output: FC/APC receptacle
 Electronic interface: 4-pin terminal block
 Control interface: USB Mini-B receptacle
 External Modulation: SMA Socket



All dimensions in millimeters (mm)

E. PIN ASSIGNMENT AND FUNCTION



4-pin terminal block (Pin 4 near to USB Connector)

Pin No.	Symbol	Power/Control	Analog /Digital	Input /Output	Description
1	V _S	P			+5VDC
2	GND	P			Power Supply Ground / Common Ground
3	N/C				No Connection
4	$\overline{\text{LO_EN}}$	C	D	I	Light Output Enable (active low). To enable: Input Low or no connection To disable: Input High

F. ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Condition	Min	Max	Unit
Operating temperature (chassis)	T_{op}	I_{op}	0	65	°C
Operating Relative Humidity	RH	I_{op}		85	%
Storage temperature	T_{stg}	Unbiased	-40	85	°C
Input current	I_s			4	A
Input Power Supply	V_s			5.5	V

G. ELECTRICAL SPECIFICATIONS ¹

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Input Power Supply	V_s		4.75	5	5.25	V
Input Current ²	I_s				1.5	A
Total Power consumption ²	P_s				7.5	W
LO-EN Input Low Voltage	V_{IL}	Optical Output Enable	0		0.8	V
LO-EN Input High Voltage	V_{IH}	Optical Output Disable	2.0		3.3	V
External Modulation Input Low Voltage	V_{EL}		0		0.8	V
External Modulation Input High Voltage	V_{EH}		2.0		3.3	V

¹) Unless otherwise specified. Tests are performed at $T_{op} = 25^{\circ}\text{C}$

²) Depending on product selection

H. OPTICAL SPECIFICATIONS

Parameter	Symbol	Min	Typ	Max	Unit
Power output ⁽¹⁾	P _o	12			mW
Spectral width @ 3dB	B _{FWHM}	70			nm
Center wavelength	λ _c	1535	1550	1565	nm
Output stability ⁽²⁾	P _{stb}			± 0.03	dB
1 hour				± 0.1	dB
8 hour					dB

(1) Source output with internal Circulator

(2) After 1 hour warm-up, under APC and CW mode, for default temperature setting (25°C) only

J. Operating Mode

Operation Setting	$\overline{\text{LO-EN}}$	OMODE ⁽²⁾	External Modulation	Nominal Optical Power ⁽¹⁾
CW	Low	0	N/C	User selectable via USB Control Interface
External modulation ⁽³⁾	Low	1	LVTTTL compatible 0 ≤ V _{EL} ≤ 0.8V and 2V ≤ V _{EH} ≤ 3.3V	

(1) Nominal optical power output refers to peak optical power during pulse operation or average power during CW operation

(2) Output Mode control selectable via USB Control Interface

(3) External modulation input impedance: 50Ohm

K. USB Control Interface

Feature: User selectable optical power output

- Under CW mode: (OMODE=0) USB interface allows user to set REF_APC (internal reference voltage for APC) for Auto Power Controlled operation.
- Under External Modulation mode: (OMODE=1) USB interface allows user to set REF_ACC (internal reference voltage for ACC) for Auto Current Controlled operation that determines the peak pulsed power.
- Unit is shipped with factory calibration table to link REF_ACC to REF_APC. USB command available for user on-site self-calibration function.

Protocol details to be advised.

L. REVISION CONTROL

Authorized Personnel	Rev	Description of Change	Date
CLC	A	Initial: Prelim Production Release	22 Mar 2010
HLH	B	1) Update Section B (pg 2) 2) Update Section D (pg 3) 3) Update Section H (pg 6)	26 Oct 2010