Compact OEM Optical Power Boosters for the Broadsweeper-OEM Wavelength-Swept Tunable Lasers

Applications

- Power boosting of tunable lasers
- Optical spectroscopy
- Optical metrology

Features

- Compact design easily fitted into OEM applications
- Plug-and-play functionality
- Three wavelength ranges centered at 790 nm, 840 nm and 930 nm
- Well spectrally-matched with the Broadsweeper-OEM tunable lasers
- No adjustments required during the device's lifetime
- USB virtual serial port for computer control
- Remote control by TTL-compatible pulses
- Superlum's companion software for computer control
- +12 VDC operating voltage

Description

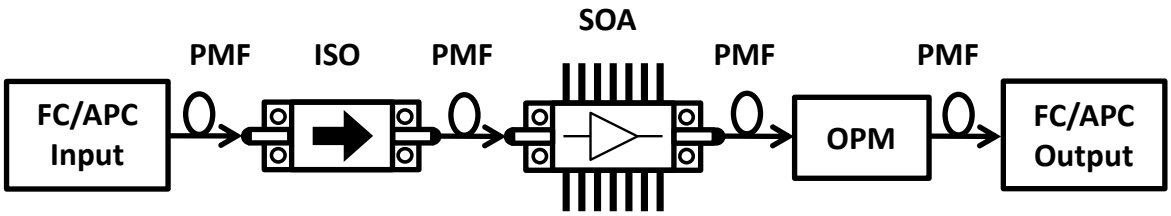
The Superlum OEM optical power boosters are designed for boosting the output power of the Broadsweeper-OEM tunable wavelength-swept lasers of Superlum.

The boosters are offered for wavelength ranges centered at 790 nm, 840 nm and 930 nm. Each device rises the power of the correspondent OEM Broadsweeper to 20 mW over the entire tuning range of the laser. The boosters and the OEM Broadsweepers have the same footprints for stacking one on top of the other if required.

Design and Operation

Superlum, Unit B3, Fota Point Enterprise Park, Carrigtwohill, Co. Cork, Ireland.
Phone: +353 21 4533666, Fax: +353 21 4533026, E-mail: sales@superlum.ie
www.superlumdiodes.com

The optical scheme of the booster (see the figure below) consists of a broadband semiconductor optical amplifier (SOA) perfectly matched to the tuning range of the correspondent OEM Broadsweeper, a broadband fiber-optic isolator, optical power monitor (OPM) and several fiber cables for optical interconnections. All fiber-optic elements of the booster including internal and external optical cables use polarization maintaining (PM) PANDA fiber. The optical patch cables for external interconnections shipped with the device have high precision, FC/APC-terminated optical connectors for PM applications. They ensure reliable connectivity with low insertion loss.



Basic optical elements of the optical power booster, Simplified schematic
(PMF – Polarization Maintaining Fiber, ISO – Isolator, SOA – Semiconductor Optical Amplifier, OPM – Optical Power Monitor)

Each booster is a factory-preset unit not requiring any adjustments during its lifetime. It boosts the light from the OEM Broadsweeper automatically when the laser power is activated. The booster's output stays at zero until the input signal is disabled (or less than 1 mW). The built-in automatic power control of the SOA module relied on the in-line OPM (see the scheme above) stabilizes the output power at 20 mW when the input power is activated and exceeds 1-mW level.

Remote Control

All power boosters are fitted with USB virtual serial ports for remote control from a computer using the Superlum companion software, which comes with the instrument.

In addition to the USB port, the booster contains a Remote control port to allow the instrument to be remotely controlled by externally-generated electrical pulses applied directly to the port pins.

Power Requirements

The instrument requires a power supply which will provide +12 VDC at 1 A. The instrument is shipped with all optical and electrical accessories for quick start and operation with the necessary OEM Broadsweeper. The

power supply unit is offered as an optional accessory and shipped on request *only*. We recommend using a linear +12 VDC power supply to provide low noise at the optical output.

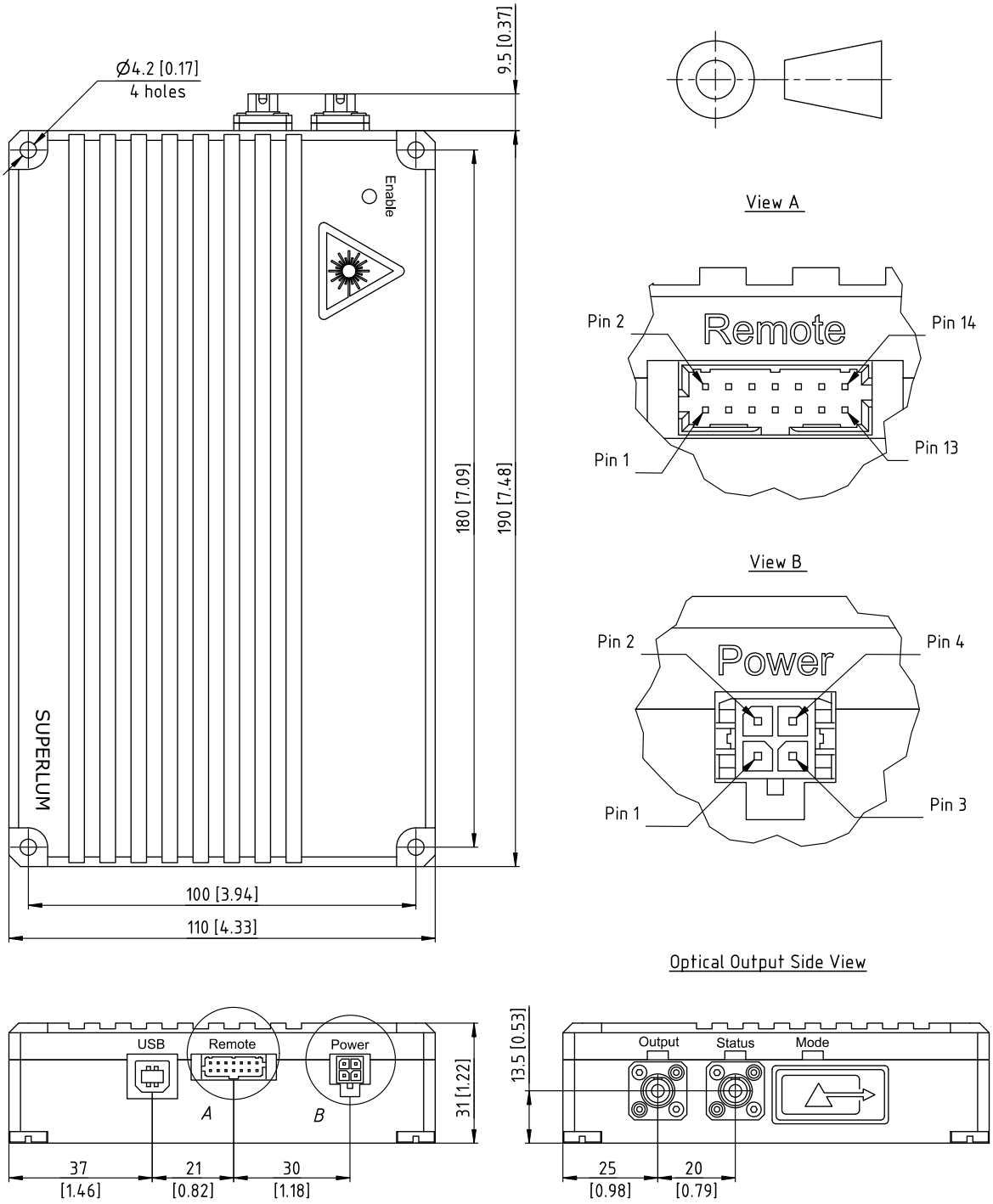
Laser Safety Measures

Optical power at the output of the OEM boosters is 20 mW. **These light sources should be classified as Class 3B laser products (as per IEC 60825-1 Ed. 3 2014-05) and are therefore potentially dangerous to a human eye.** They were specially designed for integration into customer's equipment. They do not have the necessary protective measures (such as remote interlock, key operated master control, warning signals etc.) required by correspondent Laser Safety requirements, although some of them are possible under computer control using the Superlum companion software. It is the end-user's liability to ensure the complete list of the necessary laser safety measures in their particular applications where these Superlum devices are going to be used. Superlum cannot be made liable for any injury related to the lack of the required laser safety measures and other safety measures applicable in any particular location or application.

Product Customization

There are capabilities of product customization in terms of optical power, tuning range etc. Contact Superlum with your particular technical requirements. Please note that the OEM boosters can also be modified (completely or partly) for using with other types of lasers and non-lasing light sources.

Mechanical Specifications



Dimensional drawing of the booster unit. All dimensions are in millimeters [inches].

Technical Specifications of the Optical Power Booster Series

Parameter	Model		
	BB-790-HP-OEM	BB-840-HP-OEM	BB-930-HP-OEM*
Center Wavelength	790 nm	840 nm	930 nm
Optical 3 dB Bandwidth	55 nm	75 nm	115 nm
Input Optical Power (minimum / maximum)	1 mW / 3 mW		
Output Optical Power	20 mW		
Polarization Extinction Ratio	> 18 dB		
Signal-to-ASE Excess**	> 20 dB		
Fiber Type	PANDA PM 850		
Working Fiber Axis	Slow axis, aligned to the connector key		
Optical Output	Through FC/APC matting sleeve with narrow key		
Computer Communication Port	USB virtual serial port		

* AVAILABLE UPON REQUEST

** DEPENDS ON INPUT POWER AND OPERATING WAVELENGTH

General Specifications

Parameter	Value
Operating Voltage / Current	+12 VDC / 1 A
Power Consumption	12 W (max.)
Operating Temperature Range	+15 °C to +35 °C
Storage Temperature Range	0 °C to +40 °C
Physical Dimensions (W × H × D)	110 × 31 × 190 mm
Weight	1 kg