

## Overview

PowerPhotonic manufacture a range of VBG lock optimizer (VLO) products that maximize locking range and locking efficiency for wavelength-stabilised high power diode laser bars and stacks.

When volume (VBG) and surface gratings are used to lock the wavelength of diode laser bars, locking efficiency and locking range are critically-dependent on emitter-FAC alignment. Submicron misalignment due to bar smile or lens misalignment dramatically reduces the feedback from the grating to the emitter, reducing the locking efficiency and locking range, often greatly slowing the grating alignment process. Our VBG lock optimizers use our Beam Corrector technology and are specifically designed for the task of optimising performance in wavelength-locked applications.

Our VBG Lock Optimizers enable high-performance wavelength-locking of diode laser bars and stacks, reducing alignment time and providing consistent results from build to build. They also provide fast-axis beam correction, to optimize both spatial and spectral brightness. By maximizing the locking range, these products allow wavelength-locking of bars with a wider range of natural wavelengths, over a wider temperature range, than is otherwise possible.

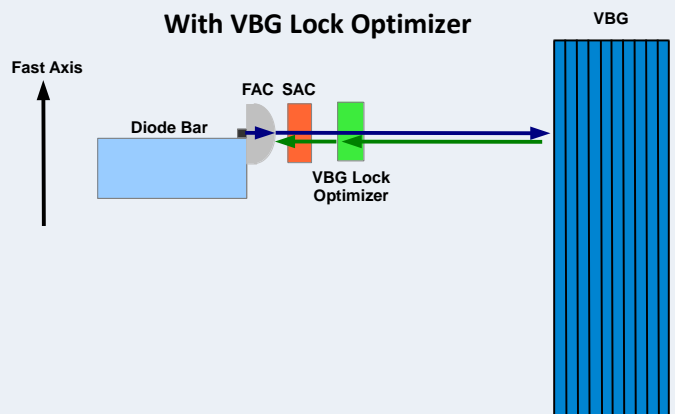
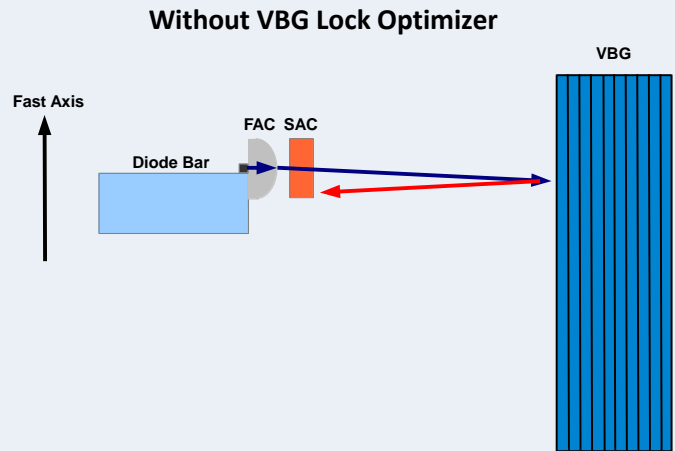
VBG Lock Optimizers are the ideal solution for high-performance wavelength locking of diode laser bars and stacks.

## Key Features

- Increases the locking efficiency of the VBG
- Extends the locking range of the VBG
- Discrete component for individual bar
- Monolithic component for entire stack

## Benefits

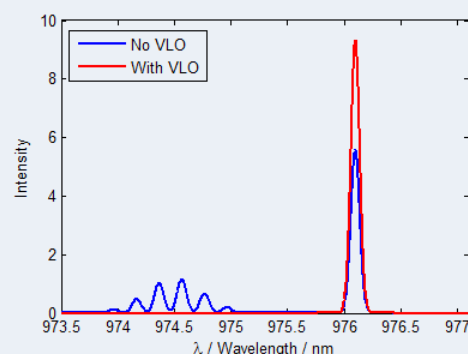
- Increased locking range over temperature and wavelength
- Slacker tolerance to bar natural wavelength
- Increased system efficiency
- Consistent and predictable locking performance
- Reduced fast-axis beam divergence, increasing overall brightness
- Reduced assembly and alignment time



## Target Applications

- VBG locked diode laser bars and stacks
- Surface-grating locked HPDL
- High-efficiency SSL pumping
- Fiber laser pumping
- High-power WDM for fiber direct-diode
- Excitation of narrow atomic transitions

## How it is Used



## Standard Product Selection

Part Number	# Bars N	FA Nominal Pitch P (mm)	SA Clear Aperture CAS (mm)	FA clear aperture, per bar CAFB (mm)	Width W (mm)	Height H (mm)	Thickness T (mm)	# Emitters	Emitter Pitch (mm)
PP-VLO-N1-V1-AR1	1	-	9.50	1.00	12.0	1.50	1.00	49	0.50
PP-VLO-N5-P18-V1-AR1	5	1.80	9.50	1.00	12.0	10.00	1.00	49	0.50
PP-VLO-N10-P18-V1-AR1	10	1.80	9.50	1.00	12.0	20.00	1.00	24	0.50
PP-VLO-N12-P18-V1-AR1	12	1.80	9.50	1.00	12.0	25.00	1.00	24	0.50
PP-VLO-N6-P20-V1-AR1	6	2.00	9.50	1.00	12.0	14.00	1.00	19	0.50
PP-VLO-N10-P20-V1-AR1	10	2.00	9.50	1.00	12.0	22.00	1.00	19	0.50
PP-VLO-Nxx-Pxx-Vx-ARx	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd

AR1 optical coating: Broadband 900-1100nm R<0.25%, others coatings on request

FA: Fast axis

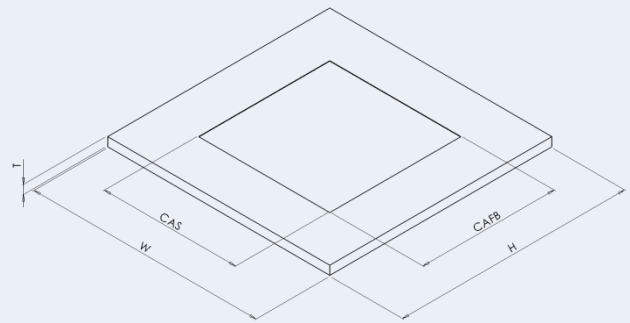
SA: Slow axis

All tbd parameters can be customer specified

W: Width [±0.10 mm]

H: Height (±0.10 mm)

T: Thickness (±0.02 mm)



## Customization Program

Due to the unique nature of the PowerPhotonic manufacturing process, our standard products can be easily modified to meet specific requirements. Please contact the PowerPhotonic for additional information.

## Options

- Single-bar optimizer
- Monolithic full-stack optimizer
- Alignment-free fitting
- Integration of additional optical functions

## About Us

PowerPhotonic is a global leader in precision laser machined micro-optics products. Our business was founded with the objective of providing unsurpassed excellence in all aspects of design and manufacture of micro-optics for optical and laser applications. Our world-class design skills are supported by an innovative and flexible manufacturing process that allows the company to design both a broad range of state-of-the-art standard micro-optics products and uniquely, to offer a low cost and rapid fabrication service for creating completely freeform optical surfaces.

## For Sales and Technical Support

### United Kingdom

PowerPhotonic Ltd.  
1 St. David's Drive  
Dalgety Bay, Fife, KY11 9PF  
United Kingdom

Tel: +44 1383 825 910

Fax: +44 1383 825 739

[sales@powerphotonic.com](mailto:sales@powerphotonic.com)

### North America

PowerPhotonic, Inc.  
4900 Hopyard Road, Suite 100  
Pleasanton, California 94588  
USA

Tel: +1 925 400 7644

Fax: +1 925 475 7422

[sales@powerphotonic-us.com](mailto:sales@powerphotonic-us.com)