



Diode Correction Phaseplates



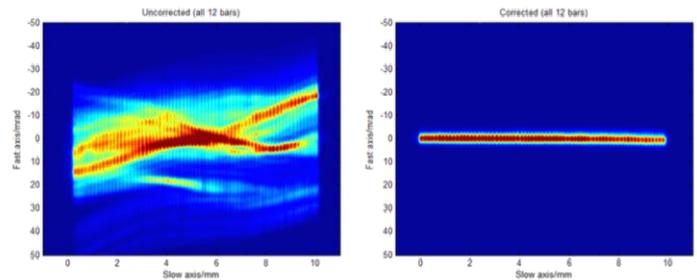
PowerPhotonic
Enhancing Beam Performance

Overview

PowerPhotonic High Power Diode Correction Phaseplates null the laser beam wavefront error, restoring the intrinsic ex-facet brightness of the laser beam. These products provide near-diffraction limited performance in fast-axis collimated beams by decreasing beam divergence, improving beam homogeneity and coupled power, and increasing laser beam brightness by between 2 and 10 times.

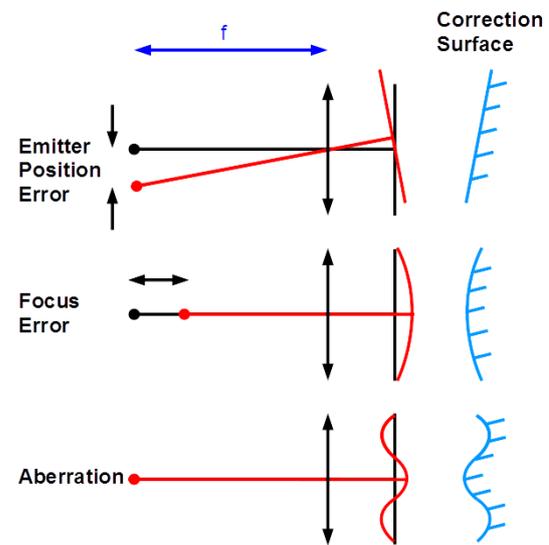
Our Diode Correction Phaseplates compensate for smile errors due to emitter pointing variation, defocus and higher-order wavefront errors, and align all bars to a common boresight direction, resulting in a high-brightness beam with consistent pointing and divergence. Far field image data is processed remotely to create individually serialized optics that perfectly match the bar or stack.

The resulting collimation performance gives exceptionally well-controlled feedback in grating-stabilized applications resulting in high locking efficiency, increased locking range and predictable performance build after build.



Before – No Correction

After – With Correction



Multiple Corrections Integrated into a Single Optic

Key Features

- Nulls laser beam wavefront error, restores intrinsic ex-facet brightness of the laser beam
- Provides near-diffraction limited performance in fast-axis collimated beams
- Mass-customization allows optimized part to be fabricated for each individual bar and stack
- Automated design based on either wavefront or beam profile data
- Each part marked with readable, traceable ID code

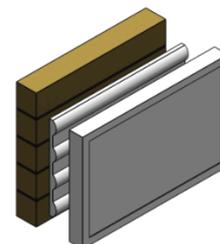
Benefits

- Improve brightness of diode bars and stacks by between 2 and 10 times
- Decreases beam divergence, improves beam homogeneity and coupling power
- Optimizes feedback in grating stabilized applications, maximizing locking efficiency and range
- Reduces stack-to-stack performance variation

Target Applications

- High brightness diode laser bars and stacks
- Fiber-couple direct-diode
- Fiber laser pump
- Wavelength-locked applications
- Line generators

How it is Used



Standard Product Selection

Part Number	#Bars N	FA Nominal Pitch P (mm)	SA Clear Aperture CAS (mm)	Width W (mm)	Height H (mm)	Thickness T (mm)	# Emitters	Emitter Pitch
PP-BC-N1-V1-AR5	1	-	9.50	12.0	1.50	1.00	19	0.5
PP-BC-N5-P18-V1-AR5	5	1.80	9.50	12.0	10.00	1.00	19	0.5
PP-BC-N10-P18-V1-AR5	10	1.80	9.50	12.0	20.00	1.00	19	0.5
PP-BC-N12-P18-V1-AR5	12	1.80	9.50	12.0	25.00	1.00	19	0.5
PP-BC-N6-P20-V1-AR5	6	2.00	9.50	12.0	14.00	1.00	19	0.5
PP-BC-N10-P20-V1-AR5	10	2.00	9.50	12.0	22.00	1.00	19	0.5
PP-BC-Fxx-Pxx-Vx-ARx	Custom	Custom	Custom	Custom	Custom	Custom	Custom	Custom

AR5 optical coating: Broadband 785-1030nm R<0.5%, other coatings on request

SA: Slow axis

FA: Fast axis

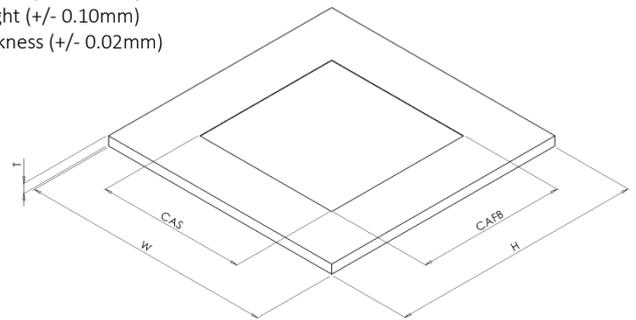
All custom parameters can be customer specified

Specific bar and stack correction based on far field image data

W: Width (+/-0.10mm)

H: Height (+/- 0.10mm)

T: Thickness (+/- 0.02mm)



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 PowerPhotonic for additional information.

Options

- Pitch, Length, Height, Thickness
- Number of emitters
- Number of bars
- Coatings
- Slow-axis collimation
- Pre-correction for optical system aberrations

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.

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