

## VHG-FAC

Effective wavelength narrowing and stabilization

### GENERAL DESCRIPTION

Volume holographic gratings (VHG) provide the capability of narrowing and stabilizing the wavelength of semiconductor lasers by forming an external cavity laser (ECL). The standard configuration of these ECL's is to use a collimating lens followed by the VHG to provide feedback to the resonator and lock the wavelength. In this configuration both elements have to be carefully aligned with tolerances in the sub- $\mu\text{m}$  and mrad range. A new approach is therefore to integrate the VHG in a fast-axis collimation lens (FAC). Besides the advantage of having only a single element, the integrated element is also less sensitive to alignment tolerances with respect to the locking due to the large divergence angle of the uncollimated array compared to a collimated array.

### ADVANTAGES

- one single element
- intrinsic wavelength stabilization
- simple alignment
- insensitive to smile of diode laser
- reduces thermal dependence of lasers
- locks at one wavelength
- improves diode yield
- narrow line width  $<0.1\text{nm}$
- highly stable and reliable



### SERVICE

We also design, develop and manufacture customized FAC lenses, which have been optimized to meet the specific requirements of your application. In order to simplify mounting, we also offer the FAC lenses with additional surfaces for mounting and/or support structures.

### QUALITY

INGENERIC ensures a substantial quality insurance throughout the whole manufacturing process. From the incoming component inspection to the precise final control of each processed item, all steps are recorded. If required a customized test set-up can be realized to ensure that there will be no deviation from the measured characteristics when the optic is subsequently used in industrial practice. All digitally saved inspection and measurement reports can be provided upon request at any time.

ONDAX is a leading manufacturer of Volume Holographic Gratings, consistently delivering the highest quality and performance VHG's. INGENERIC and ONDAX have combined their skills and experience to provide their customers with the FAC-VHG product line.

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### SPECIFICATION DATA

Lens Type	NA	EFL (mm)	BFL (mm)	L (mm)	H (mm)	W (mm)	SB (mm)	HB (mm)	XB (mm)	D (mrad)
FAC-065-900	0.65	0.90	0.16	12.0	1.10	1.10	x	x	x	0.80
FAC-065-780	0.65	0.78	0.05	12.0	0.88	1.10	x	x	x	0.90

Standard wavelength of VHG:  $\lambda = 976 \text{ nm}$ . Customized wavelength of VHG on request.

Quality Standards			
SB	Standard Brightness	power within an angle of +/- D [mrad]	> 75%
HB	High Brightness	power within an angle of +/- D [mrad]	> 85%
XB	Extra-High Brightness	power within an angle of +/- D [mrad]	> 90%

Options	
Customized numerical aperture, focal length and back focal length	
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Customized length	
Customized coating	

NA: Numerical aperture  
 EFL: Effective focal length @ 976 nm  
 BFL: Back focal length  
 Standard Coating: AR 780-1020 nm  
 Quality specification for laser bar with divergence of 35° (FWHM)

L: Length (+/- 0.10 mm) according to customer specification  
 H: Height (+/- 0.01 mm)  
 W: Width (+/- 0.01 mm)  
 Transmission: > 99%

