

FBC Phase masks

Plus first and minus first order principle

Improving manufacturability of gratings in fiber and waveguide based components through accuracy, characterization and on-mask identification

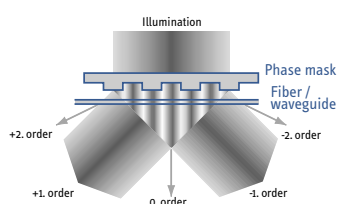
Holographically produced Ibsen Phase masks offer period accuracy down to +/- 0.1 Ångström and enhance customer manufacturing performance and yield.

Clear on-mask identification leads to straightforward handling in manufacturing and consequently improves operational costs for customers. A flexible specification to customer requirements and optional extensive characterization further enhances manufacturability of grating based components.



| Features |
|--|
| Holographically produced in 100% cleanroom environment |
| Period accuracy and uniformity of +/- 0.01 nm |
| Continuous linear chirp |
| Low zero order |
| Low defect count |
| Clear on-mask identification |

| Applications |
|-------------------------------------|
| ITU filters and add/drop components |
| Raman |
| LD-stabilizers |
| Gain Flattening Filters |
| Dispersion Compensation |
| Sensors |



The principle behind +1/-1 order Phase masks

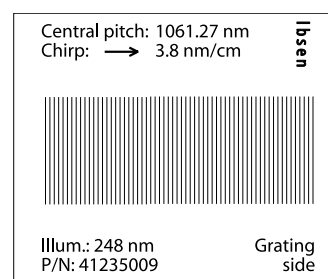
The +1/-1 order Phase mask is optimized to diffract light equally and maximally into the plus first and minus first orders. Self-interference between the two orders creates an

interference pattern with half the Phase mask period. Ibsen manufactures a series of +1/-1 order Phase masks with highly suppressed zero order.

| Product Range and Specifications | |
|-----------------------------------|---------------------------------|
| Grating periods | 400 nm – 1800 nm |
| Illumination wavelengths | 193 nm – 435 nm |
| Material | UV-grade Fused Silica |
| Period accuracy | +/- 0.01 nm |
| Period uniformity | +/- 0.01 nm |
| Available chirp rates | 0.01 nm/cm – 30 nm/cm* |
| Guaranteed zero order suppression | <4%* (Lower spec. optional) |
| Typical zero order suppression | 1-2%* |
| Zero order uniformity: | Grating length 10 mm +/- 0.5%* |
| | Grating length 25 mm +/- 0.75%* |
| | Grating length 50 mm +/- 1%* |

* Not applicable to all configurations across the product range

Clear on-mask identification



Options

- Custom specifications
- Various characterization reports available

| Standard Grating and Substrate Sizes | |
|--------------------------------------|----------------------|
| Grating size | Substrate size |
| 10 mm x 10 mm | 30 mm x 25 mm x 2 mm |
| 25 mm x 10 mm | 30 mm x 25 mm x 2 mm |
| 50 mm x 10 mm | 3" x 3" x 2 mm |
| Larger grating areas | Request for quote |
| Sawing to custom sizes | Optional |

Ibsen offers Cleaning Service!

Effective cleaning service can optionally include extensive cleanliness evaluation and diagnostic inspection.

Specifications are subject to change without prior notice.