

## **Diffraction Waveguides**



*Custom Diffraction Waveguides for Your  
HUD and HMD Systems*

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**We specialize in building custom diffraction waveguides to your specification.**

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***The Holographix Advantage:***

||||▶ **Experience:** *Holographix has successfully completed numerous waveguide projects for many customers over the past 10 years.*

||||▶ **Development:** *Our structured development approach ensures manufacturable solutions.*

||||▶ **Ramp to Production:** *Our manufacturing processes are readily scalable to meet your volume production needs!*

# Capabilities and Resources

## Applications

Diffraction waveguides are used in numerous applications for a wide variety of industries. Devices that use diffraction waveguides include:

### Display Products:

- Helmet- and Head-Mounted Displays (HMD)
- Heads-Up Displays (HUD)
- Augmented Reality (AR) Systems
- Virtual Reality (VR) Systems

### Non-Display Products:

- Biosensors

## Diffraction Waveguide Assembly

Holographix has the experience and capability to take your optical waveguide design from specification to production. Holographix is a leader in the development and manufacture of complex, high quality, custom optical waveguides. As a result, we have developed numerous creative solutions to meet or exceed our customers' expectations. Drawing on years of experience creating custom high-performance diffraction waveguide assemblies, let our quality driven team help turn your next design into a state-of-the-art product!

## Quality Assurance

Over the past 25 years, Holographix has earned a reputation for providing our customers with outstanding development and manufacturing services for custom surface relief patterns. With a company-wide emphasis on quality, Holographix maintains a rigorous ISO 9001:2008 certified Quality Assurance program.

## Waveguide Specifications

Waveguide Size:	up to 350 mm x 350 mm
Grating Pitch:	down to 200 nm
Diffraction Grating Profile:	binary, blazed, slanted, sinusoidal
Grating-to-Grating Alignment:	< 30 arc sec
Grating-to-Substrate Alignment:	< 30 arc sec
Waveguide Wedge:	< 5 arc sec
Wavefront:	< $\lambda/8$ P-V
Optical Transmission:	> 99% from 420 nm to 2.2 $\mu$ m
Temperature Range:	-50° C to 260° C
Chemical Resistance:	most common solvents

## Replication Benefits

Our proprietary replication process provides a cost-effective alternative to competing manufacturing processes. The inherent repeatability of the replication process also eliminates inconsistencies associated with other forms of production.

## Replication Facilities

Production of replicated components and assemblies requires a significant investment in capital equipment. Our 15,000 square foot facility in Marlborough, MA is equipped with:

- ADE and Zygo 4 phase-shift interferometers (Qty 4)
- ADT 7100 Dicing System
- AFM Workshop TT- Atomic Force Microscope (AFM)
- Amray 3600 Scanning Electron Microscope (SEM)
- Cary 500 UV-Vis-NIR Spectrophotometer
- Custom fully automated UV curing stations
- Denton DESK II sputtering systems (Qty 2)
- Denton Infinity 22 thin-film box coater
- Keyence VK-X260K Violet Laser Confocal Microscope
- March Plasma AP-1000 plasma treatment system
- Mitutoyo Vision Systems (Qty 2)

## Production Capabilities

Holographix specializes in the manufacture of custom replicated components and assemblies in production quantities. The inherent speed of our cold-forming replication process allows us to offer economical volume pricing without the associated high tooling costs. Whether your production requirements call for 100 individual components or 100,000 wafers, we can offer you a cost-effective solution.

Please contact us via phone, e-mail, or fax with any inquiries you may have regarding our services. We will be happy to assist you!

For a more comprehensive overview of Holographix and our technology, please visit our website below.

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