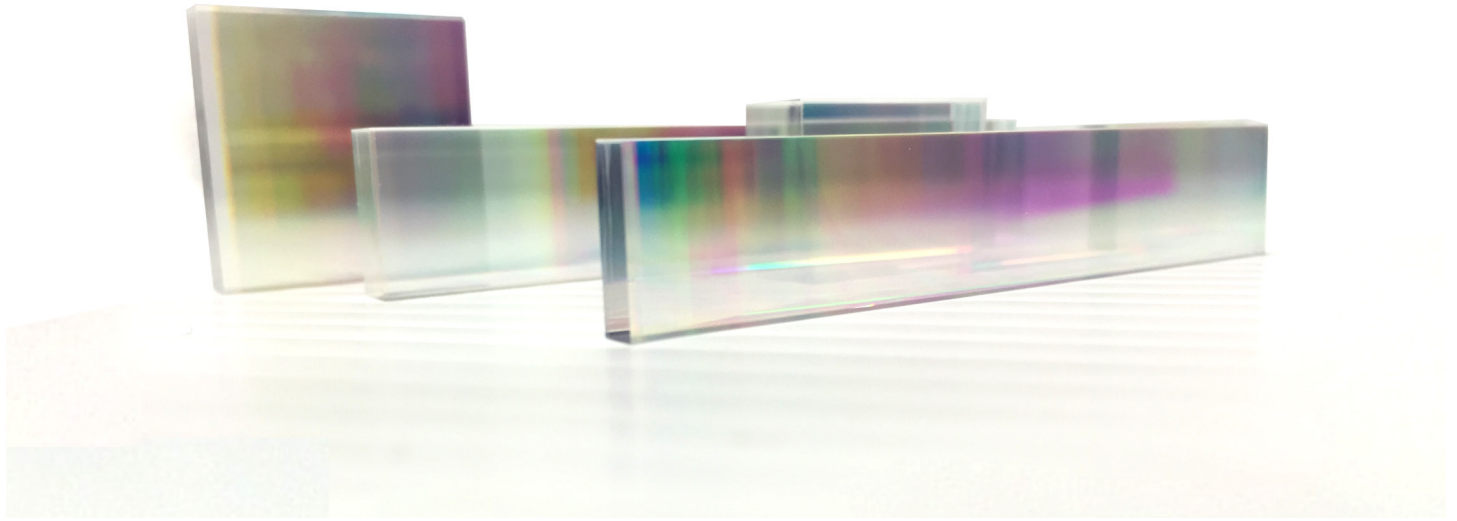


# HIGH-EFFICIENCY TRANSMISSION DIFFRACTION GRATING

## T-1400-800 Series

The T-1400-800 series lithographically patterned transmission diffraction grating is designed to be used in demanding industrial applications (Raman and other types of spectroscopy, OCT, pulse compression and high power beam combining). It is characterized by high efficiency, low polarization sensitivity, and high power handling. Gratings produced by Coherent undergo extensive quality assurance reviews, have a proven reliability track record, and are competitively priced.



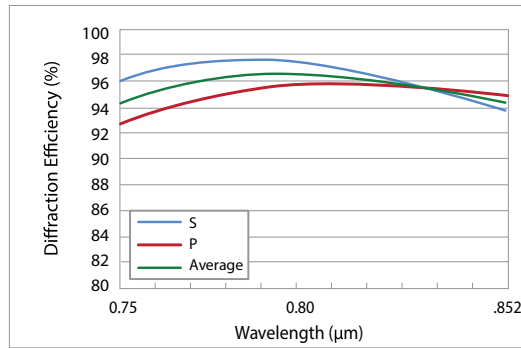
## PRODUCT KEY

T - 1400 - 800 - 24x14.9 - 94

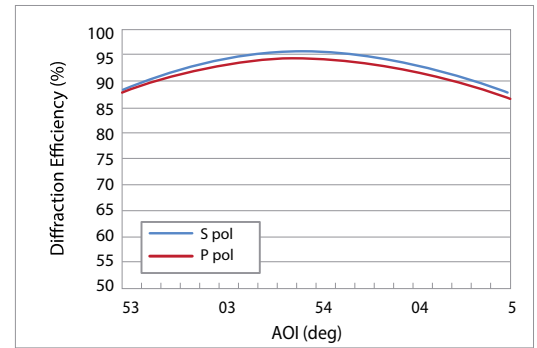
Transmission | Grooves/mm | Central wavelength, nm | Width x Height, mm  
Groove || to Height | Min efficiency, %

# HIGH-EFFICIENCY TRANSMISSION DIFFRACTION GRATING

The polarization-independent transmission diffraction grating has 1398.6 lines/mm and is designed to operate near 800 nm central wavelength at 34° angle of incidence (AOI). Extended wavelength range performance and angular sensitivity information is provided below.

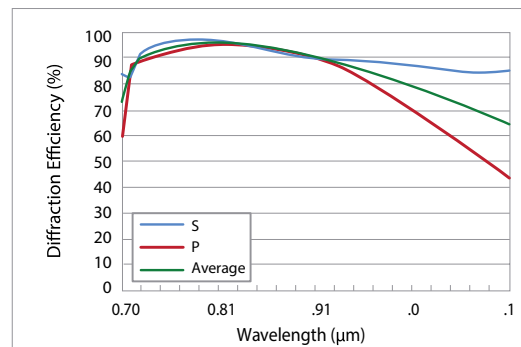


Typical absolute diffraction efficiency at AOI 34°\*

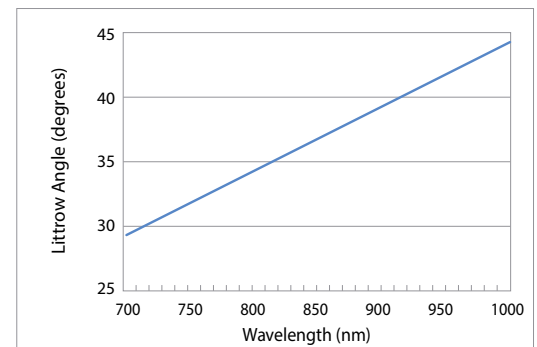


Diffraction efficiency at 800 nm as a function of AOI \*

Extended operational range: The grating may operate over a broader wavelength range, provided that suitable anti-reflective coating and angle of incidence is used. The plot below shows simulated performance\* over extended range assuming fixed input angle (designed Littrow angle of 34°), not accounting for AR coating losses. Optimal input angle for each wavelength is shown on the right.



Typical absolute diffraction efficiency at AOI 34° \*



Optimal input angle for each wavelength (Littrow condition)

\* Simulated performance shown (for guidance only)

## Specifications

Description		
Line Density	1398.60	Lines/mm
Line Density Uniformity	0.001	Lines/mm
Angle of Incidence (AOI) <sup>1</sup>	34 ± 1	°
Wavelength Range	800 ± 20	nm
Optimal polarization <sup>2</sup>	Any	
Diffraction Efficiency <sup>3</sup>	94 (average polarization)	%
Dimension tolerances	±0.2 for grating size and width	
Substrate Thickness	0.95 ± 0.050 mm	
Material	Fused silica, dielectric layers, no polymers	
Scratch/Dig <sup>4</sup>	60/40 standard, 40/20 and 20/10 custom	

Notes:

<sup>1</sup> Optical grating performance will remain similar over larger variation in angle of incidence. See plot.

<sup>2</sup> S-polarization: electric field vector is parallel to the grating lines;

<sup>3</sup> Worst case in the operational wavelength range for average polarization.

<sup>4</sup> As per MIL-PRF-1380B in the clear aperture; no requirements outside of the clear aperture.