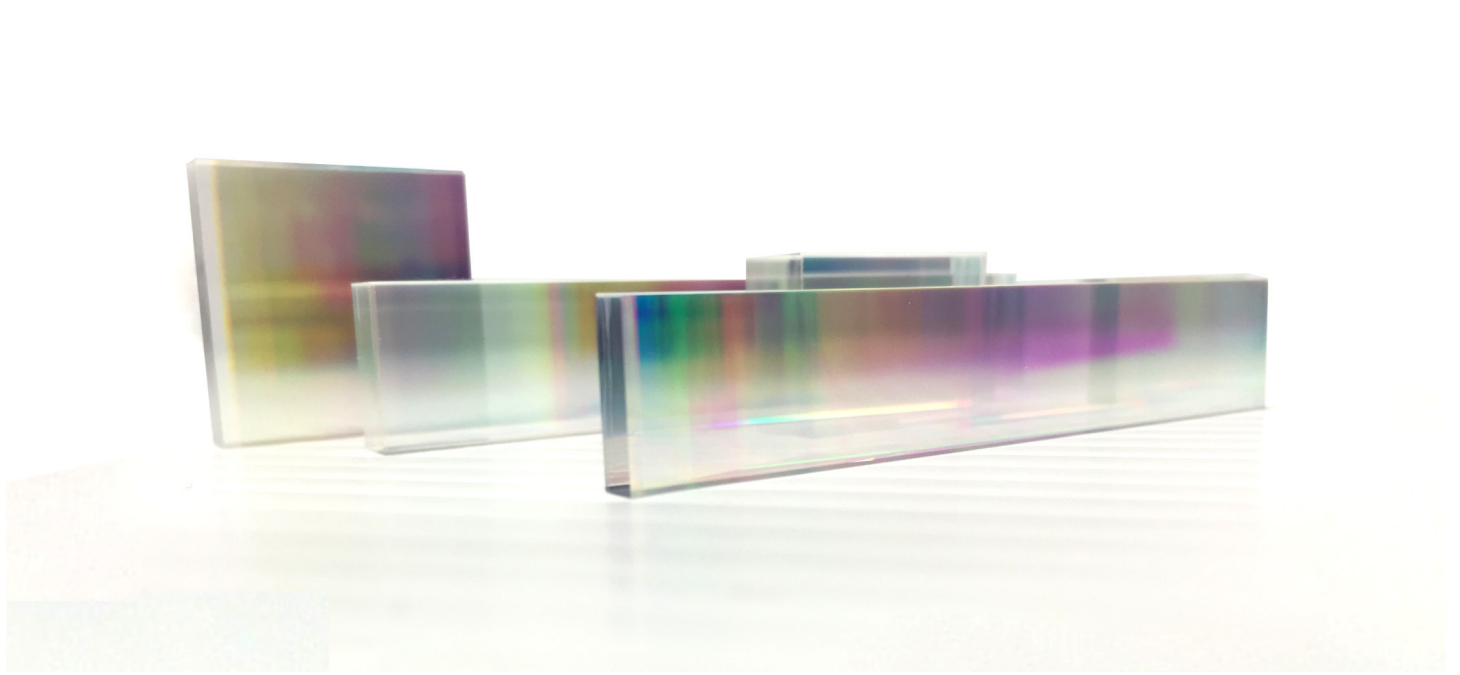


# HIGH-EFFICIENCY TRANSMISSION DIFFRACTION GRATING

## T-1850-970s Series

T-1850-970s series lithographically patterned transmission diffraction grating is designed to be used in demanding industrial applications (spectroscopy, pulse compression and high power beam combining). It is characterized by high efficiency, excellent long-term stability, and high power handling. Gratings produced by Coherent undergo extensive quality assurance, have proven reliability track record and are competitively priced.



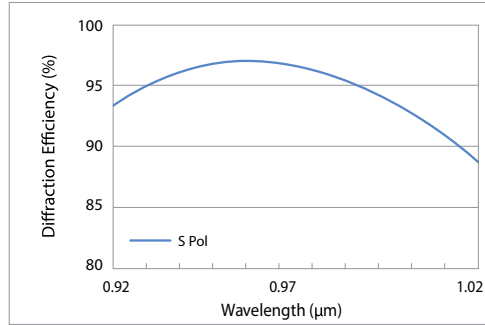
## PRODUCT KEY

T - 1850 - 970s - 31.8x10 - 93

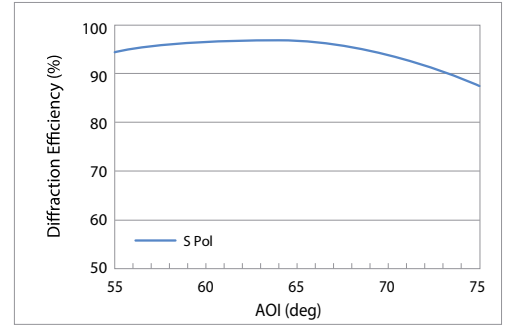
Transmission | Grooves/mm | Central wavelength, nm | Width x Height, mm  
Groove || to Height | Min efficiency, %

# HIGH-EFFICIENCY TRANSMISSION DIFFRACTION GRATING

The S-polarization optimized transmission grating has 1851.85 lines/mm and designed to operate near 970 nm central wavelength at 63.9° angle of incidence (AOI). Extended wavelength range performance and angular sensitivity information is provided below.

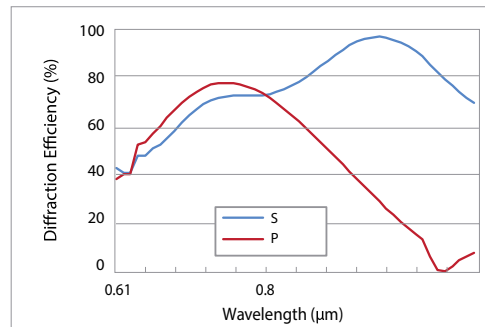


Typical absolute diffraction efficiency at AOI 63.9°\*

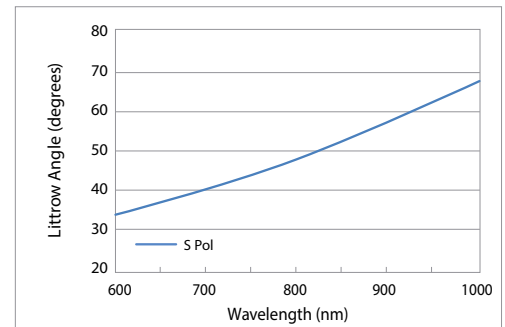


Diffraction efficiency at 970 nm as a function of AOI \*

Extended operational range: The grating may operate over broader wavelength range provided that suitable antireflective coating and angle of incidence is used. The plot below shows simulated performance\* over extended range assuming fixed input angle (design Littrow angle of 63.9°), not accounting for AR coating losses. Optimal input angle for each wavelength is shown on the right.



Typical absolute diffraction efficiency at AOI 63.9° \*



Optimal input angle for each wavelength (Littrow condition)

\* Simulated performance shown (for guidance only)

## Specifications

Description		
Line Density	1851.85	Lines/mm
Line Density Uniformity	0.001	Lines/mm
Angle of Incidence (AOI) <sup>1</sup>	63.9 ± 1	°
Wavelength Range	970 ± 20	nm
Optimal polarization <sup>2</sup>	S	
Diffraction Efficiency <sup>3</sup>	> 93	%
Dimension tolerances	±0.2 for grating size and width	
Substrate Thickness	0.675 ± 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.

<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 optimal polarization.

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