Gooch & Housego

OL Series 750 Monochromator/ Grating Specifications

Grating	Typical Wavelength Range[1] (µm)	Blaze (mm)	g/mm	Dispersion (nm/mm)		Half Bandwidth[2] (nm)		Resolution[3] (nm)
				750-M-S	750-M-D	750-M-S	750-M-D	
						Min - Max	Min - Max	
LG-025-2400H	0.2 - 0.5	0.24	2400	2	1	0.25 - 10	0.125 - 5	0.05
LG-025-1200H	0.2 - 0.6	0.25	1200	4	2	0.5 - 20	0.25 - 10	0.05
LG-03-2400	0.2 - 0.6	0.30	2400	2	1	0.25 - 10	0.125 - 5	0.05
LG-03-1200	0.2 - 0.75	0.30	1200	4	2	0.5 - 20	0.25 - 10	0.05
LG-03-600	0.2 - 0.75	0.30	600	8	4	1 - 40	0.5 - 20	0.05
LG-05-1200	0.25 - 1.1	0.50	1200	4	2	0.5 - 20	0.25 - 10	0.05
LG-05-600	0.25 - 1.1	0.50	600	8	4	1 - 40	0.5 - 20	0.05
LG-075-1200	0.3 - 1.2	0.75	1200	4	2	0.5 - 20	0.25 - 10	0.05
LG-075-600	0.3 - 1.5	0.75	600	8	4	1 - 40	0.5 - 20	0.05
LG-10-600	0.5 - 1.8	1.0	600	8	4	1 - 40	0.5 - 20	0.05
LG-12-600	0.65 - 2.0	1.2	600	8	4	1 - 40	0.5 - 20	0.05
LG-16-600	0.75 - 2.2	1.6	600	8	4	1 - 40	0.5 - 20	0.05
LG-17-200	0.8 - 3.5	1.7	200	24	12	3 - 120	1.5 - 60	0.15
LG-20-300	1.2 - 3.5	2.0	300	16	8	2 - 80	1 - 40	0.10
LG-20-150	1.0 - 3.5	2.0	150	32	16	4 - 160	2 - 80	0.20
LG-40-150	1.9 - 6.5	4.0	150	32	16	4 - 160	2 - 80	0.20
LG-46-75	2.5 - 7.0	4.6	75	64	32	8 - 320	4 - 160	0.40
LG-100-75	6.0 - 14.5	10.0	75	64	32	8 - 320	4 - 160	0.40
LG-120-50	7.0 - 16.0	12.0	50	96	48	12 - 480	6 - 240	0.60
LG-150-40	7.5 - 18.0	15.0	40	120	60	15 - 600	7.5 - 300	0.75
LG-225-40	14.0 – 30.0	22.5	40	120	60	15 - 600	7.5 - 300	0.75
LG-300-30	17.0 - 30.0	30.0	30	160	80	20 - 800	10 - 400	1.00

Accuracy (Wavelength): ±0.05%
Precision (Wavelength): ±0.01%
Focal Length: 254 mm
F/Number: f/4
Grating Size: 68 x 68 mm

1 The actual wavelength range will be dependent on the particular measurement system configuration including input/exit optics, source, detector & slits. The efficiency of infrared gratings can also vary with ambient atmospheric conditions & optical path length.

2 Six sets of user interchangeable fixed slits are provided with widths of 0.125, 0.25, 0.5, 1.25, 2.5 & 5.0 mm. Smaller bandwidths can be achieved using optional smaller size slits.

3 Determined by both the mechanical resolution limits and the operating software resolution limits.

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As part of our policy of continuous product improvement, we reserve the right to change specifications at any time

Monochromator/Grating Parameters

Accuracy (Wavelength) - The difference between the actual (true) wavelength and the wavelength setting. Expressed in units of wavelength (i.e. nm, mm, etc.) or as a percentage of wavelength setting.

Blazed Wavelength - The concentration of a limited region of the spectrum into any order other than the zero order. Blazed gratings are manufactured to produce maximum efficiency at designated (blazed) wavelengths. The blazed wavelength is dependent on the groove geometry and is the wavelength at which the grating is most efficient. The grating's efficiency decreases further away from the blazed wavelength which is the reason multiple gratings with different blazed wavelengths are required to cover wide wavelength ranges.

Diffraction Grating - Disperses a beam of radiant energy of mixed wavelengths into its spectral components. It consists of a glass substrate carrying a layer of deposited aluminum that has been pressure-ruled with a large number of fine equidistant grooves, using a diamond edge as a tool. Light falling on such a grating is dispersed into a series of spectra on both sides of the incident beam, the linear dispersion being inversely proportional to the line spacing. By proper shaping of the diamond edge, however, the grooves can be formed in such a way as to concentrate most of the energy into a single spectral order; such a grating is said to be blazed. Plane gratings require additional optics to focus the spectral lines.

Dispersion - Defines the extent to which a spectral interval is spread out across the focal field of the monochromator and is expressed in nm/mm. It is associated with the monochromator's ability to resolve fine spectral detail. Dispersion is inversely proportional to the density of the grating's grooves/mm. The dispersion (nm/mm) multiplied by the slit width (mm) yields the monochromator's approximate HBW.

Grooves/mm (g/mm) - The density of equidistant grooves or lines on the grating. The greater the g/mm, the higher the dispersion.

Half-Bandwidth (HBW) - The full width of the bandpass at half-power of the monochromator. Can be specified in either wavelength units or in percent of center wavelength. The HBW is also commonly referred to as the full width at half maximum (FWHM). The HBW is calculated by multiplying the dispersion factor by the slit width.

Order - A grating blazed in first order is equally blazed in higher orders. For example, a grating blazed at 600 nm in 1st order is also blazed at 300 nm in 2nd order and so on. The maximum efficiency for each of the higher orders decreases as the order increases. The effect of higher order flux is normally eliminated by the use of "cut-on"/blocking filters.

Precision (Repeatability) - The accuracy to which a wavelength setting can be repeatedly set. Can be specified in either wavelength units or in percent of wavelength.

Resolution (Wavelength) - The minimum adjustable wavelength increment effectively achieved by the wavelength drive mechanism. This is sometimes referred to as the minimum scanning or stepping increment.

Stray Light - Radiant flux at the exit slit of the monochromator caused by either a) random scatter from mirrors, gratings, etc. or b) directional scattered light such as reflections, re-entry spectra, grating ghosts and grating generated focused stray light.

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