

# » CVF

## Circular Variable Filters

CI Systems' Circular Variable Filters (CVF's) are interference narrow-pass filters of advanced design which are deposited on circular substrates, called segments.

Film thickness, and therefore the wavelength of peak transmittance varies linearly and continuously with the angular position on the segment.

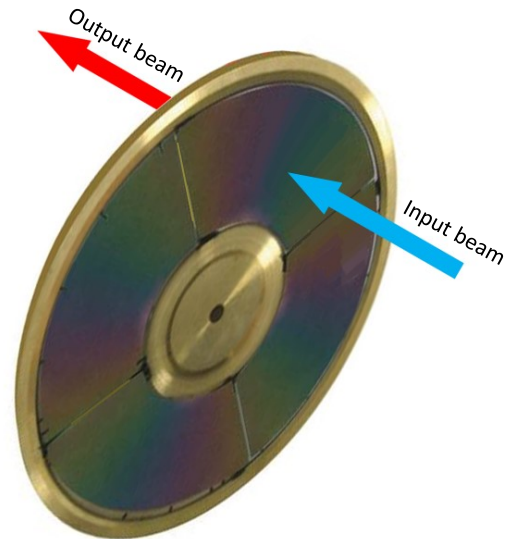
CI Systems CVF's are ideally suited as Monochromators in compact, non-dispersive spectrometers, providing medium-resolution spectral radiation measurements, or when information is needed at a number of specific wavelengths within the relevant spectral range.

A CVF can be manufactured to cover any wavelength range from  $0.4\mu\text{m}$  in the visible region of the spectrum up to  $14.3\mu\text{m}$  in the long-wave infrared (LWIR).

The specific wavelength at which the radiation is transmitted by the segment is selected by precisely positioning it on the optical beam.

When a CVF segment is rotated around its axis, the beam traces a circumferential path on it, delivering a continuous scan of its complete wavelength range. A spectral resolution element size on the CVF varies between one and two millimeters.

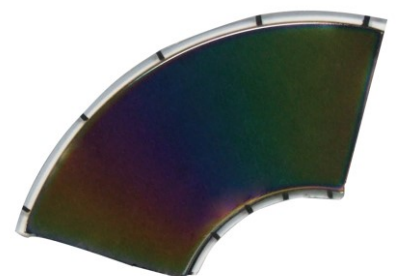
CI Systems offers its highly-professional personnel to support in the optical assembly calibration and integration of the CVF in your system.



CVF (Circular Variable Filters) Assembly

### » KEY FEATURES

- ▶ Full wavelength scanning from visible to LWIR.
- ▶ Successive discrete wavelength selection within the segment's wavelength range.
- ▶ Allows flexibility and versatility in the instrument design.
- ▶ The CVF is physically durable, able to withstand the rigors of industrial and field environmental conditions.
- ▶ The CVF is resistant to abrasion and humidity
- ▶ Can be cleaned using conventional optical cleaning methods.



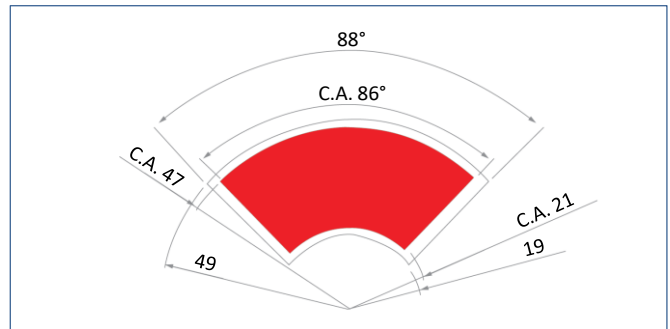
CVF Segment

### » SPECIFICATIONS:

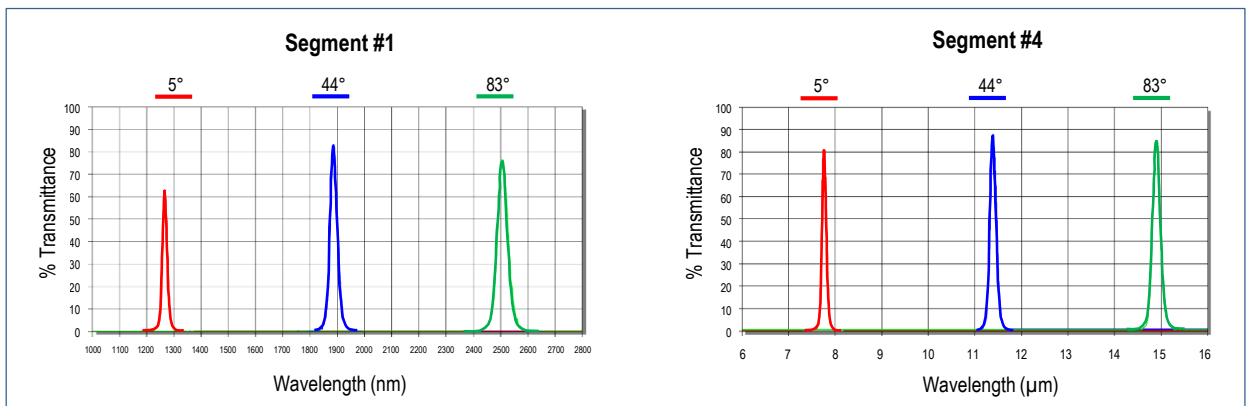
Segment :	#5a	#5b	#6	#1	#2	#3	#4
Nominal wavelength range, $\mu\text{m}$	0.4 – 0.675	0.65 – 0.95	0.9 – 1.35	1.3 – 2.5	2.4 – 4.6	4.3 – 8.1	7.7 – 14.3
Blocking range, $\mu\text{m}$	0.3 – 1.15	0.3 – 1.15	0.3 – 2.6	1 - 15	1 - 15	1 - 15	1 - 15
Bandwidth (FWHM) (1)	2 %	2 %	2 %	2 %	2 %	2 %	2 %
Transmittance at peak wavelength	>45% at 450–600nm >15% at the edges	> 35 %	>30% below $1\mu\text{m}$ >50% above $1\mu\text{m}$	> 50 %	> 50 %	> 50 %	> 50 %
Out-of-band average transmittance (2)	< 0.1 %	< 0.1 %	< 0.1 %	< 0.1 %	< 0.1 %	< 0.1 %	< 0.1 %

#### Notes:

- 1) Bandwidth (Full Width at Half Maximum) as a % of peak wavelength, typical with 2 mm diameter spot.
- 2) Out-of-band average transmittance in the blocking range



The red area indicates the active filter area or Clear Aperture (C.A).  
The linear radii dimensions are in millimeters



Two examples of spectral transmittance graphs measured at different positions on the CVF