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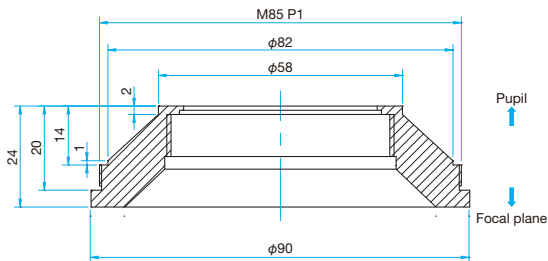
The f theta lens for CO₂ laser is made by a single lens of zinc selenide (ZnSe). These are used in the laser marking systems.

- It is compact and lightweight because it is composed of a single lens.
- The design and use are processed to an optimum shape of various aberrations becomes smaller.
- There are wide variety of the lineup that scan area is 50mm to 300mm.

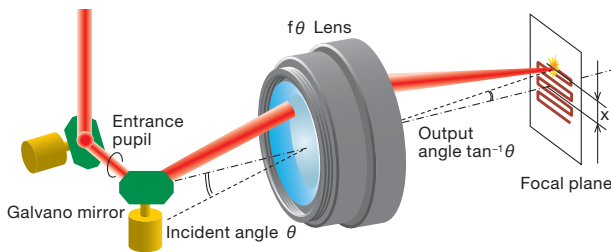


Outline Drawing

(in mm)



Schematic



Specifications

| | |
|-----------------------------|--------------------------------|
| Material | Zinc selenide (ZnSe) |
| Design wavelength | 10.6 μ m |
| Entrance pupil diameter | ϕ 12mm |
| Scanning angle | \pm 12.5° |
| Distance to lens from pupil | 25mm |
| Coating | Dielectric multi-layer coating |

Guide

- ▶ We also offer f theta lens in other than CO₂ laser wavelength of 10.6 μ m. [Reference](#) ▶ B186

Attention

- ▶ Hydrogen selenium is harmful when it comes to contact with strong acids! Do not immerse the lens in hydrochloric or sulphuric acid.
- ▶ When light is condensed on the surface of ZnSe, the high power laser beam may produce toxic gases due to the thermal decomposition. In addition, a large amount of gas and powder occurs when the ZnSe lens is damaged by the laser thermal runaway. In case of the ZnSe lens is damaged by any chance, DO NOT handle the lens with your bare hands. Collect the debris and be careful not to inhale the powder and steam generated.
- ▶ It is not recommended to use the f theta lens for the optical imaging system because it is designed for the scanning system.
- ▶ Please place in accordance with the position of the entrance pupil of the f θ lens beam scanning system (galvanometer mirror). If the incident pupil is not in position of the beam scanning system, the optimum focusing spot cannot be achieved because the aberration will increase.

By using the f theta lens, it is possible to be moved a laser light spot in constant speed linear motion on the focal plane by scanning the mirrors such as galvanometer scanner mirrors.

The f theta lens enables this by the effect of distortion.

Mathematically it is expressed as following;

focal length = "f", ideal image height = "y", the angle of scanned = " θ " therefore, $y = f\theta$.

In the normal single lens, the ideal image height "y" is represented by " $y = f \tan\theta$ ".

Characteristics of both are the same in a small angle range. However, the difference is greater angle increases.

Specifications

| Part Number | Focal length f [mm] | Scanning Range [mm] | WD [mm] |
|-----------------------|---------------------|---------------------|---------|
| f θ -75-10600 | 75 | 50×50 | 57.8 |
| f θ -100-10600 | 100 | 70×70 | 85.8 |
| f θ -150-10600 | 150 | 110×110 | 139.0 |
| f θ -200-10600 | 200 | 140×140 | 181.2 |
| f θ -250-10600 | 250 | 175×175 | 232.7 |
| f θ -300-10600 | 300 | 210×210 | 283.6 |
| f θ -340-10600 | 340 | 250×250 | 344.7 |
| f θ -400-10600 | 400 | 300×300 | 414.5 |

Important: Treatment of ZnSe optics

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ZnSe (Zinc selenide) is Poisonous and Deleterious Substances classified as legal, Depending on the specifications, the certificate of delivery may be required acquisition of Poisonous and Deleterious Substances.

In addition, ZnSe Optics disposal after use is prohibited.

When lenses that are no longer needed, please return them to us.

However, it is only in our products. The above is a case in Japan and please ask your local sales contact about requirements outside Japan.