

## Product Information

### Product Description:

Carmanhaas Telecentric scanning lenses are a special configuration in which the arrangement of optics are designed to focus the beam such that it is always perpendicular to the flat field. This is especially important for drilling applications such as via hole drilling in printed circuit boards, ensuring that the drilled holes are perpendicular to the surface even off the center of the scanning field. Welding and structuring applications can also benefit from the use of a telecentric lens, as the spot remains round, even along the edges of the field. ([UV F-Theta Lens manufacturer china](#))

Telecentric scanning lenses are always multi-element designs and are supplied in a housing. At least one lens element will be larger than the field size to be scanned. In practice, this means that for reasons of manufacture and cost that only small field sizes are possible, in turn implying short focal lengths. Each specific application demands custom solutions for these lens types. Contact us with your specifications for a preliminary design and we will quote you.

### Characteristics

- 1□High precision, small assembly error:  $< 0.05\text{mm}$
- 2□High transmittance:  $\geq 99.8\%$
- 3□High damage threshold:  $10\text{GW/cm}^2$

### Carmanhaas Advantages:

- (1)Made to custom requirements.
- (2)Advanced in-house design, based on years of innovation in the field
- (3)Perpendicular beam for critical applications

[Telecentric lens factory china](#)

## Telecentric F-theta Scan Lenses



## 1030-1090nm Fiber Laser



## 532nm Green Laser



## 355nm UV Laser



**Technical Parameters:**

**355nm Telecentric F-Theta Scan Lenses**

Part Description	FL(mm)	Scan Field (mm)	Max Entrance Pupil (mm)	Working Distance (mm)	Mounting Thread
TSL-355-50-100	100	50*50	7	132	M85x1
TSL-355-50-100	100	50*50	9	135	M85x1
TSL-355-100-170	170	100*100	10	224.6	M85x1
TSL-355-130-250-(15CA)	250	130*130	15	341.8	M85x1
TSL-355-175-305-(15CA)	305	175*175	15	393.8	6-M8

## Optical System Layout

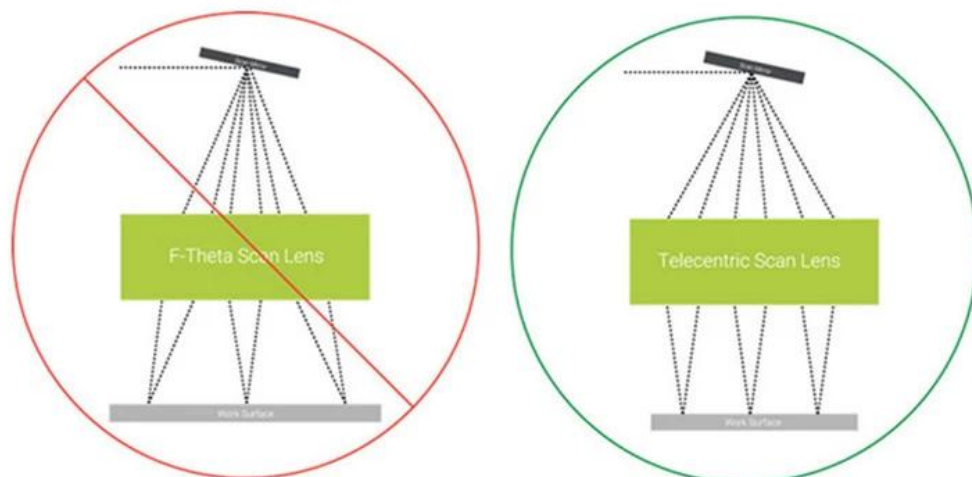
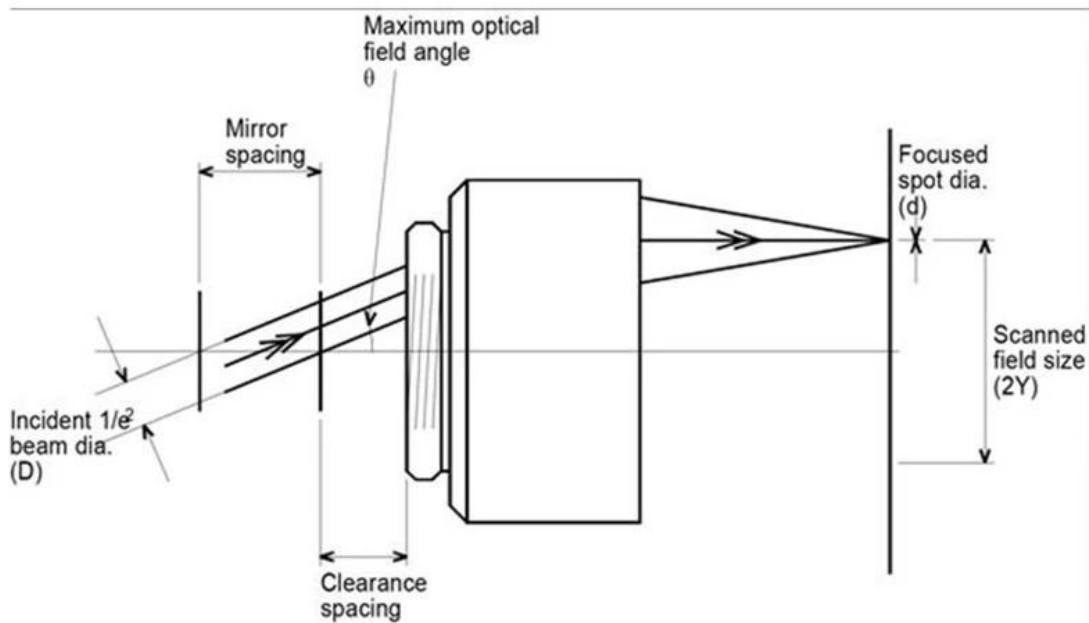
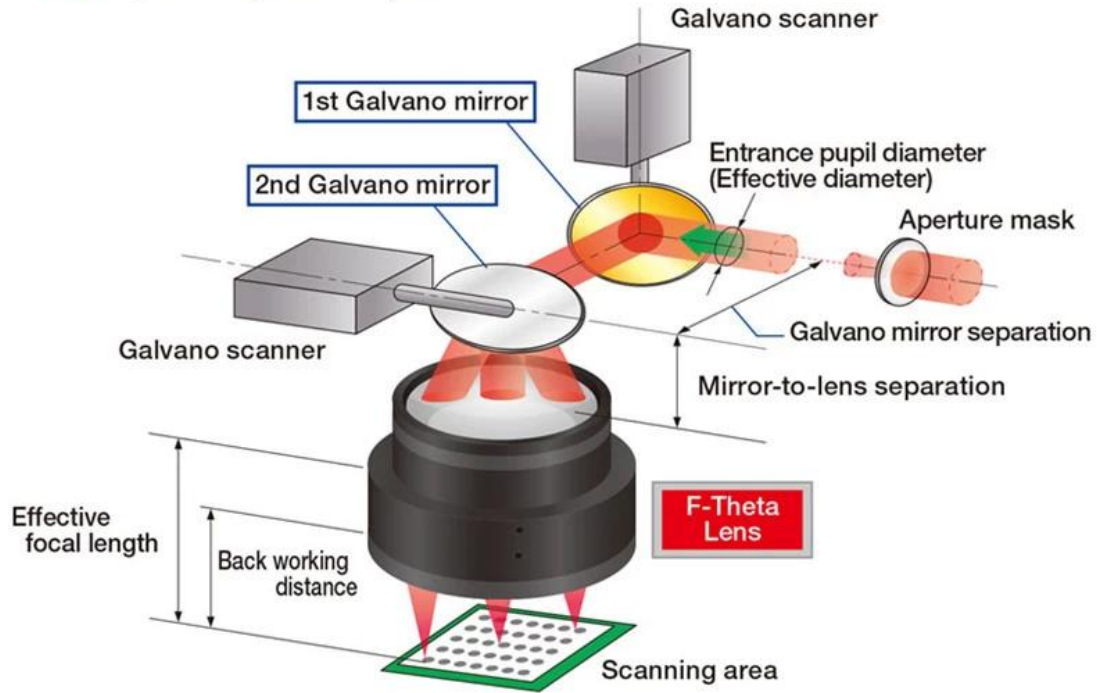
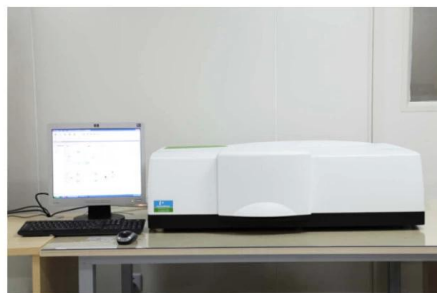


Figure 2: Non-telecentric vs. telecentric f-theta lenses.

**Factory**



**TRIOPTICS OptiSpheric 2000 AF**  
---Testing EFL、R、Centering Error、Wedge Angle、BFL、MTF



**PerkinElmer Lambda 950**---Testing Transmission and Reflectivity



**Carmanhaas Coating Machine**

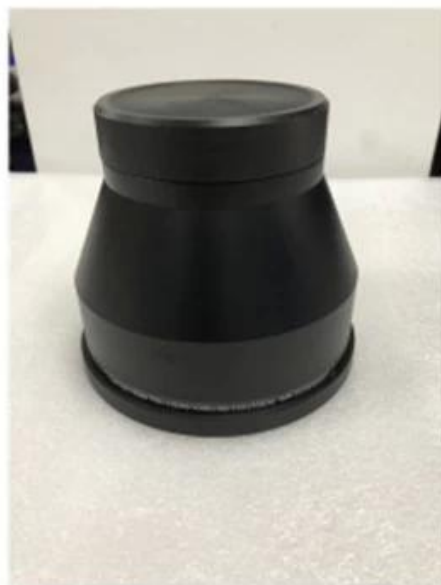
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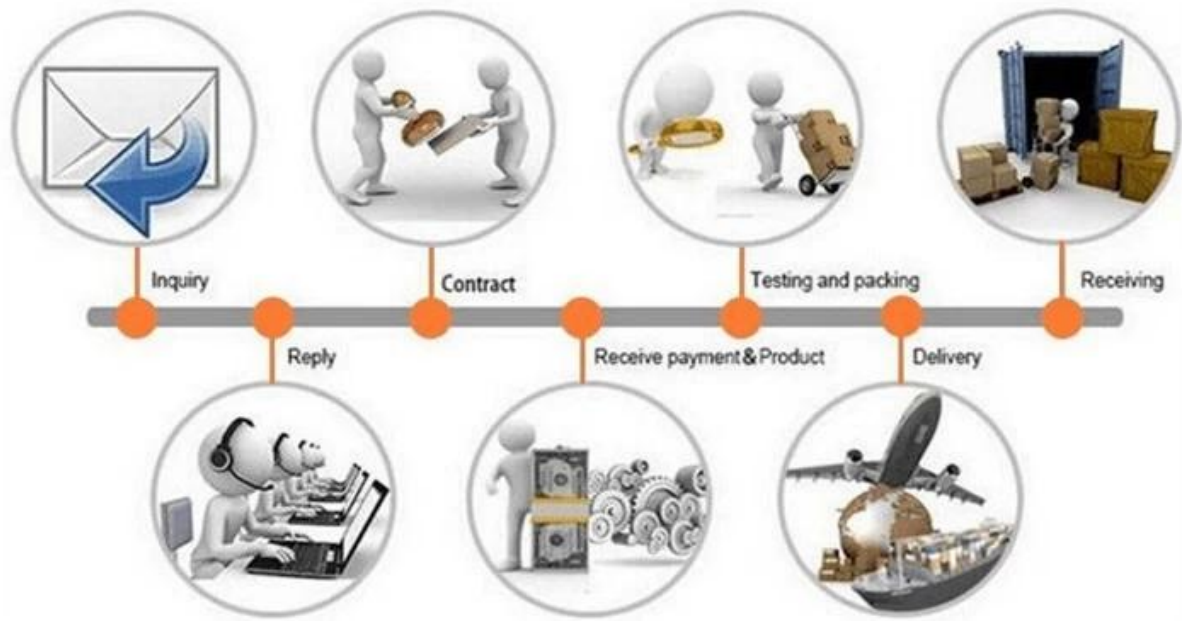
## Packing List



## Packaging & Shipping







### Return Policy:

Should returns be required:

Step 1) Contact us with this website email.

Step 2) Provide as much detail as possible about the problem you are having.

Step 3) Authorization to return the item will be issued.

Step 4) Return the item for the agreed replacement or refund.

### **Logistics:**

For Laser Optics Order, ship by DHL, UPS, FedEx, TNT, EMS etc

For Laser Machine Order, can be optional with terms of EXW, FOB, CNF, CIF by Air or by Sea based on the buyer's forwarder or ours.

## FAQ

Q1.Are you a manufacturer?

A1: Yes, we are professional and experienced manufacturer with our own molds and production lines.

Q2.How about quality of products?

A2: Our technicians and QC teams test the products one by one using aging line, professional devices and instruments to ensure the quality for all products.

Q3.How about price?

A3: We are a manufacturer and always offer our customers the most competitive prices.

Q4.How to place an order?

A4: Contact with online service, or sent email to us directly, we will reply to you with product price, specifications, packing etc. soon. Thank you.

Q5.May I send material to test marking performance?

A5: Yes! You are welcome to send material to test our superior quality and service.

Q6.Can I visit your factory?

A6: Yes, welcome to visit our factory at your convenient time.

Q7.How can I make OEM or ODM orders?

A7: We have different print processing for different OEM/ODM orders. Please contact us with online service or send email to us directly.

Q8. How should I pay for my orders?

A8: You can pay by T/T would be available for qualified bank and MOQ required for each order.