Intane OPTICS® 英田光学

Large-size Precision Optical Elements

Company profile

Nanjing Intane Optics was founded in 2003 by Professor Zhou Bifang, the former director of Nanjing Astronomical Instruments Research Center, the Chinese Academy of Sciences. Nanjing Intane Optics is a national high-tech enterprise with precision optical systems solutions at its core competency. The company boasts a team of experienced engineers in precision optical engineering, with proven technological capabilities ranging from complex system design, integration, assembly, testing to the manufacturing of key optical components.

Advanced optical elements are the core components that determine the performance of precision optical instruments. As technology and requirements develop, there are increasingly higher demands for the performance of advanced optical elements.

Nanjing Intane Optics is actively engaged in research on ultra-precision optical component processing technology. With internationally advanced polishing and testing equipment, combined with self-developed CNC equipment, our experienced technicians team is constantly taking on challenges of high-performance optical component manufacturing with increasing difficulty. We have achieved full-spectrum nano-scale processing accuracy in the manufacturing of optical aspherics, spheres, planes, cylinders, and windows. Through high-performance optical coating, our products feature long life, high reliability, high strength, and diversity of optical components.

Based on high-precision optical components, Intane Optics also has developed a series of high-precision optical testing instruments and equipment. Collimators of various aperture and specifications have a good reputation among customers. Intane Opics: Your trusted supplier for precision optical system solutions.

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WITH LASER

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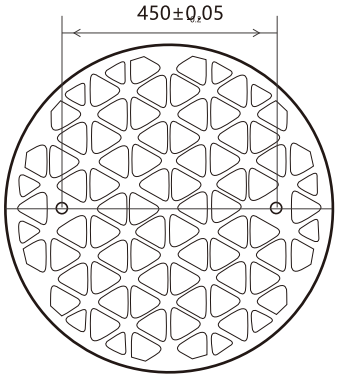
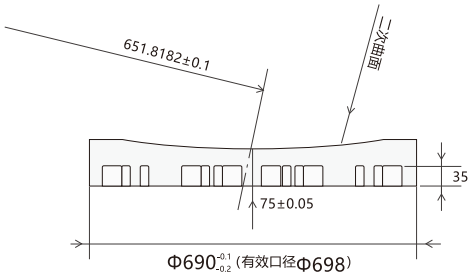
Products and application cases

Off-axis high-order aspheric primary mirrors

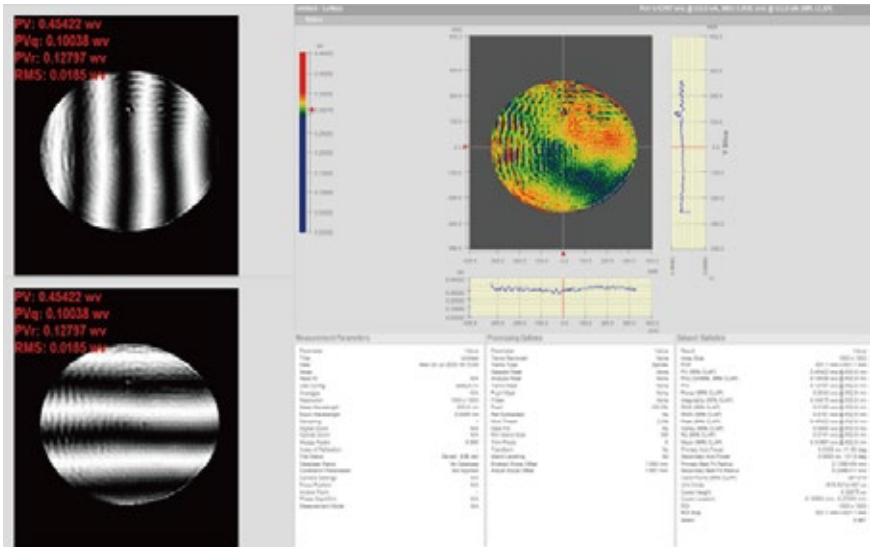




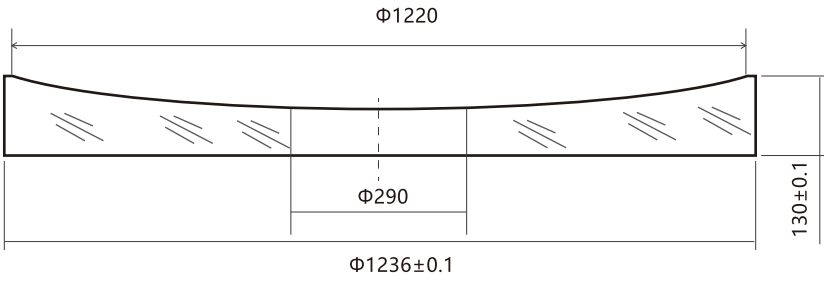
Parameters:

Name	Inspection item	Inspection result	Inspection item	Inspection result
Off-axis high-order aspheric primary mirrors 690	Outer diameter	Φ689.900mm	Distance of location hole	450mm
	Center thickness	75.0394mm	Top’ s radius of curvature (R)	3153.6264mm
	Edge thickness	92.3mm	K value	-1.0691
	Edge thickness difference	0.0395mm	Off-axis distance	651.8182mm
	Platform width	3.5mm	Clear aperture	665mm
	Diameter of location hole	20.07mm	Finishment	80/50S&D
	Depth of location hole	34.96mm	Roughness	0.8nm
	TOP of location hole	0.0320mm	Surface flatness precision	RMS：0.0185λ
	Coating requirement	0.4um～0.5um：96.259%；0.5um～0.6um：96.029%；0.6um～1.2um：97.695%；1.2um～2.5um：98.169%；2.5um～14um：98.475%。		

Surface flatness precision value:



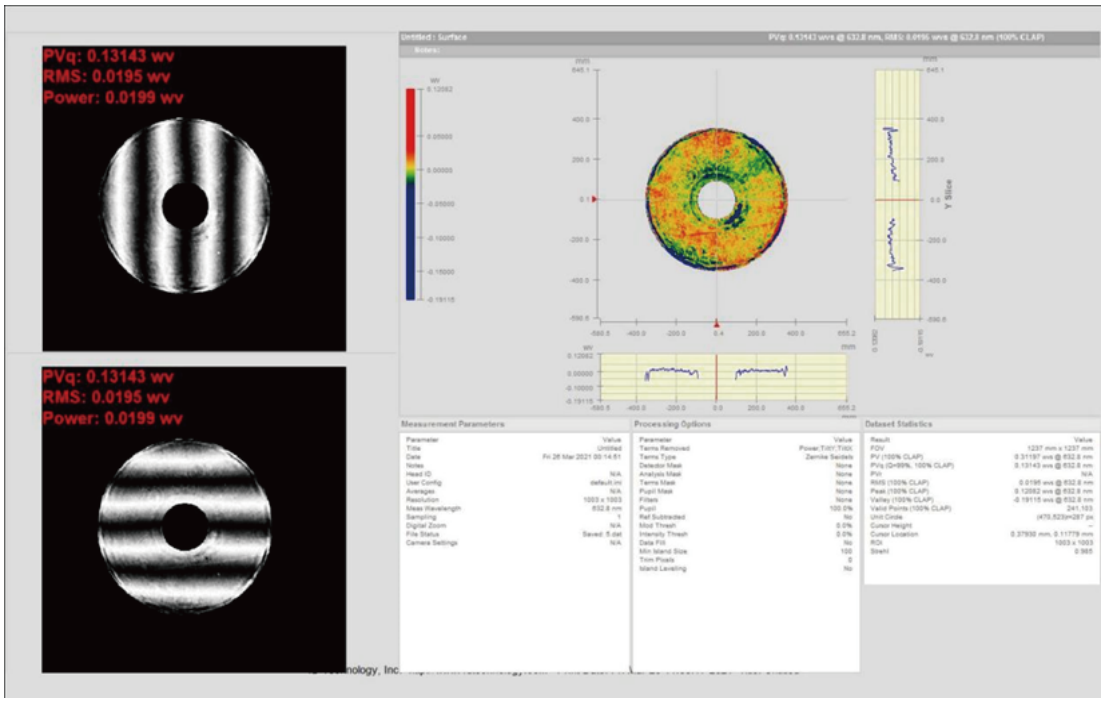
SiC coaxial parabolic primary mirrors



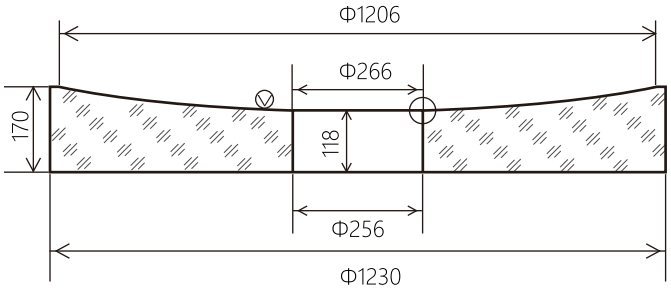
Parameters:

Name	Inspection item	Inspection result	Inspection item	Inspection result
1236mm SiC primary mirror	Flatness of surface A	0.0500mm	Coaxiality between center hole and outer circle	Φ0.0413mm
	Outer roundness	0.0145mm	Diameter of reflecting surface	Φ1220.37mm
	Outer diameter	Φ1236.0636mm	Flatness of ground reflecting surface	0.0082mm
	Perpendicularity between outer circle and surface A	Φ0.0129mm	Parallelism between ground reflecting surface and surface A	0.025mm
	Outer cylindricity	0.0329mm	Effective clear aperture	Φ1200mm
	Center hole diameter	Φ289.9617mm	Top' s radius of curvature (R)	3000.2688
	Perpendicularity between center hole and surface A	Φ0.0019mm	Aspherical coefficient K	-1.00005
	Cylindricity of center hole	0.0111mm	Coaxiality between reflecting surfaces optical axis and outer circle	Φ0.1000mm
	Total thickness	130.08、130.00、130.06、130.03		

Surface flatness precision value:



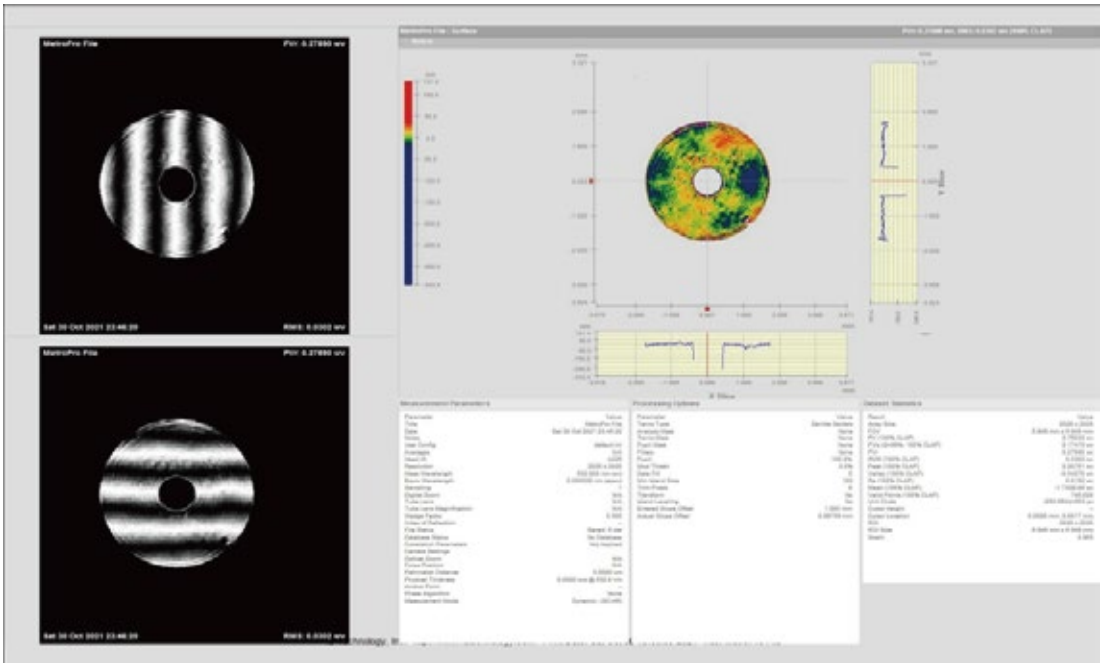
Coaxial parabolic primary mirrors



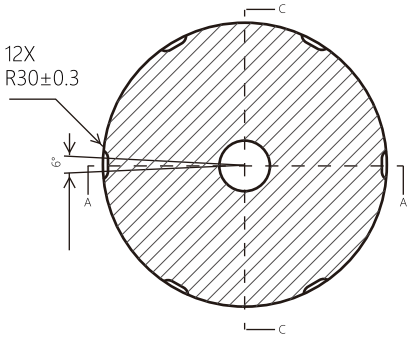
Parameters:

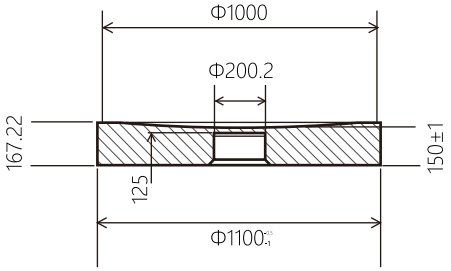
Name	Inspection item	Inspection result	Inspection item	Inspection result
1230mm Coaxial parabolic primary mirrors	Outer diameter	Φ1229.8370mm	Diameter of center step hole	Φ0.0413
	Depth of center hole	117.7854mm	Cylindricity of center hole	Φ1220.37
	Surface finish	Ⅲ	Perpendicularity between center hole and surface A	0.0082
	Clear aperture	Φ1200mm	Flatness of surface A	0.025
	R of top	3911.4217mm	Flatness of bottom	Φ1200
	K value	-0.9992	Eccentricity between optical axis and outer circle	3000.2688
	Edge thickness	169.7040mm	Perpendicularity between optical axis and surface A	-1.00005
	Diameter of center hole	Φ256.3753mm	Surface roughness	Φ0.1000
	Aperture of reflecting surface	Φ1209.3896mm	Coating	20nm～1700nm: 91.835%; 1064nm: 96.887% 420nm～800nm: 91.840%

Surface flatness precision value:



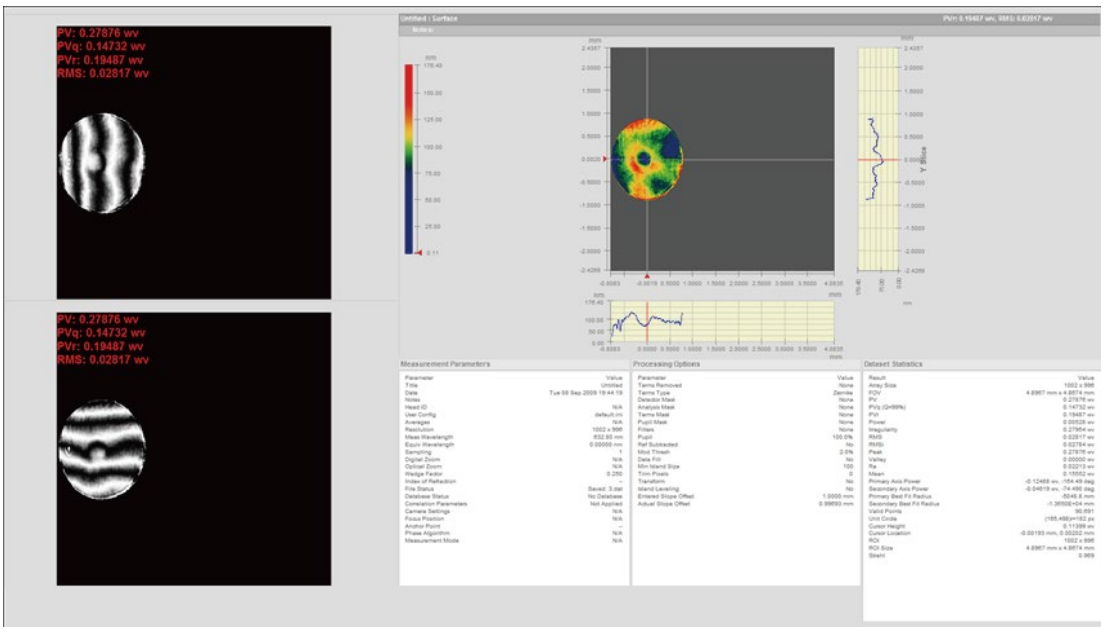
Off-axis parabolic primary mirrors





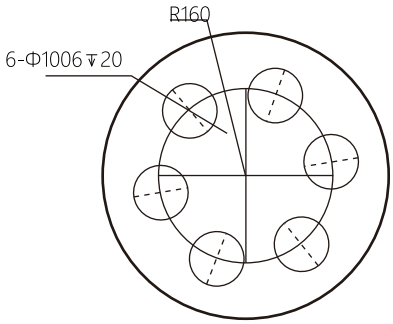
Name	Inspection item	Inspection result	Inspection item	Inspection result
1100mm off-axis parabolic primary mirror	RMS	0.02817λ	Thickness between center of surface R2 and back hole	24.9
	Outer diameter	Φ1099.44	Coaxiality between outer circle and reference surface A	0.05
	Diameter of surface R2	Φ1070	Cylindricity of reference surface A	0.02
	Clear aperture	Φ1040	Thickness of side groove	20.7
	Diameter of back hole	Φ200	Location of side groove	60.64
	Depth of back hole	125	R	7709.4963
	Edge thickness	167.12	Off-axis distance	1010
	Center thickness	149.90	Finish	IV

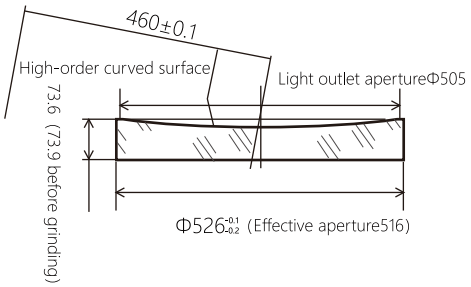
Surface flatness precision value:



Spherical reflectors

High-order curved primary mirrors

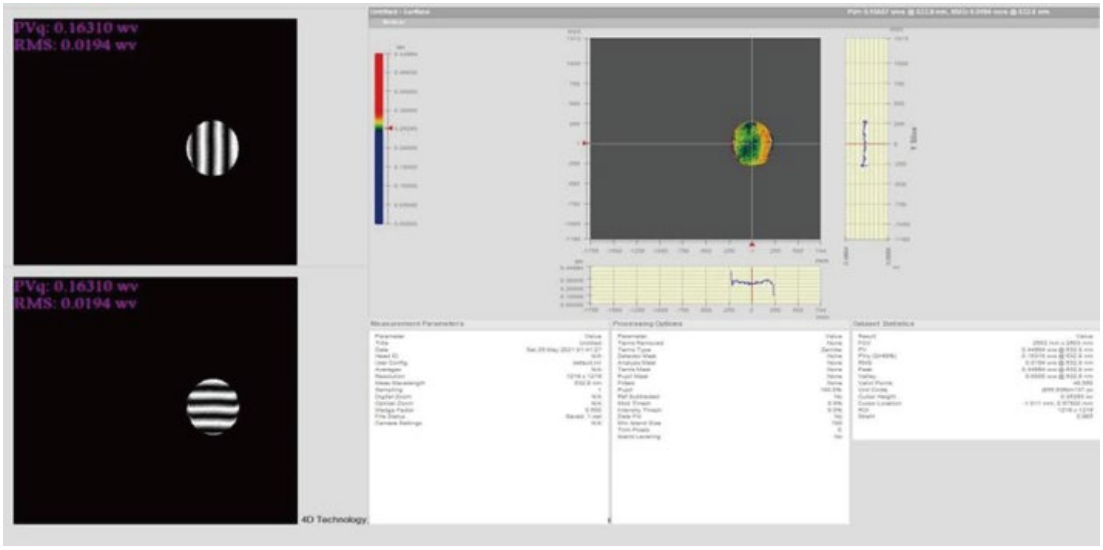




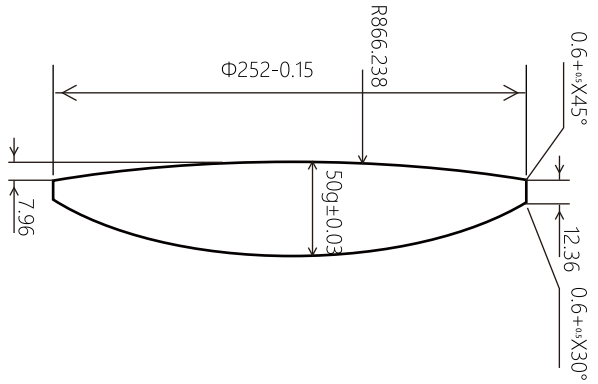
Parameters:

Name	Inspection item	Inspection result (mm)	Inspection item	Inspection result (mm)
526 high-order curved primary mirror	Outer diameter	525.9126	Center thickness	60.9572
	Effective aperture	Φ516	Top' s radius of curvature	2348.756
	Aperture of light outlet	Guaranteed by machining	K value	Guaranteed by machining
	Surface finish	80/50	Off-axis distance	460.0
	Surface roughness	Guaranteed by machining	Diameter of back hole	Φ100.0
	Edge thickness difference	0.0157	Depth of back hole	20.0
	Edge thickness	75.0065		

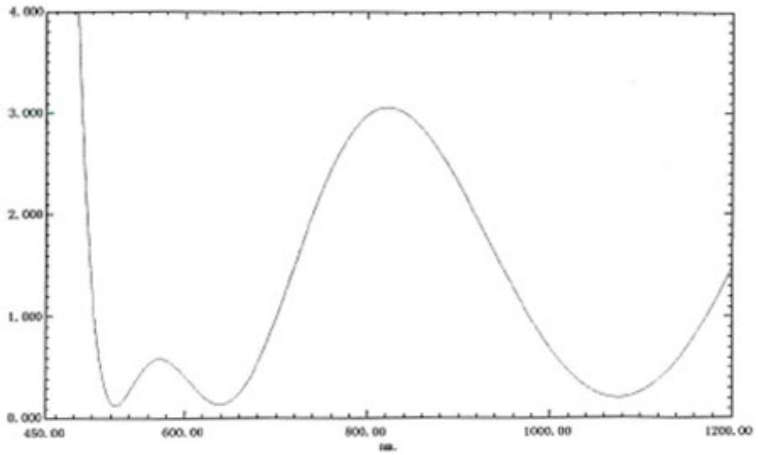
Surface flatness precision value:



Spherical lens



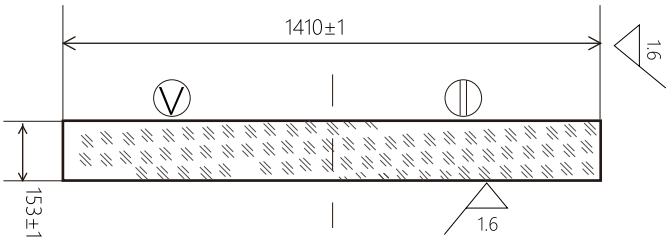
Name	Inspection item	Inspection result	Inspection item	Inspection result
252 spherical lens	Outer diameter	Φ251.9434	N	0.5
	Edge thickness	12.36	ΔN	0.25; 0.25
	Center thickness	50.0317	Centration	Unmeasurable
	R1	866.1178	Surface finish	IV
	R2	293.40792	Clear aperture	Φ246; Φ246



No.	Wavelength (nm)	Reflectivity	描述
1	518.00	0.129	
2	532.00	0.107	
3	637.00	0.086	
4	656.00	0.148	
5	1072.00	0.119	
6	1085.00	0.148	

Plane mirrors

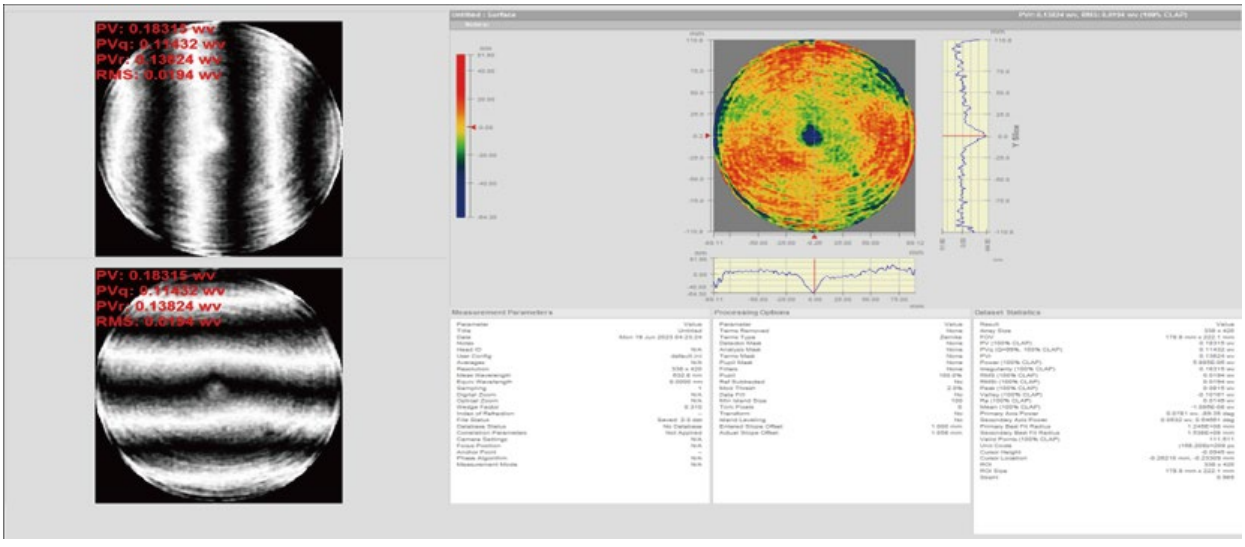
Standard plane mirrors



Spherical lens

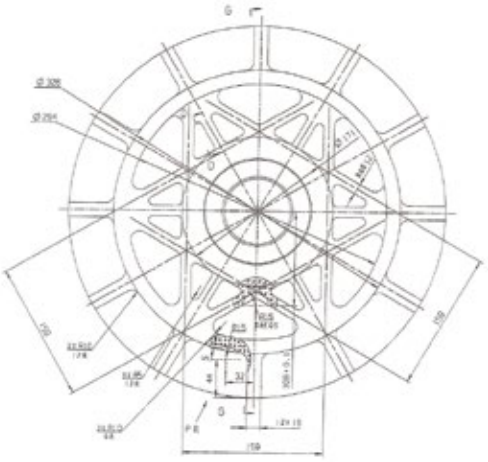
Name	Inspection item	Inspection result	Inspection item	Inspection result
1410mm standard plane mirror	Outer diameter	Φ1409.4	Pitch adjustment	Range: ±5°; precision: 0.01°
	Thickness	154	Height adjustment	±5cm
	Clear aperture	Φ1400	Surface flatness precision	0.0199λ, 0.0197λ, 0.0200λ, 0.0189λ, 0.0199λ, 0.0198λ, 0.0194λ, 0.0197λ,
	Roughness	1nm		
	Azimuth adjustment	Range: ±10°; precision:0.01°	Coating requirement	93.7195%

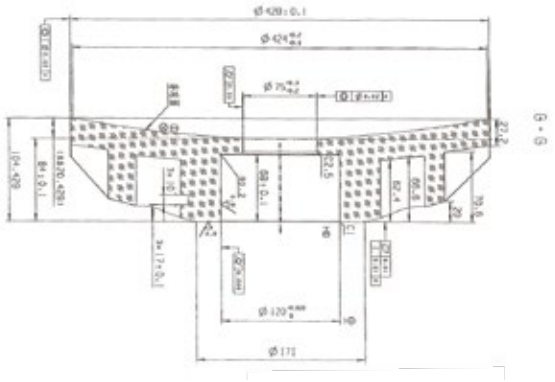
Surface flatness precision value:



Lightweight reflectors

Lightweight primary mirror

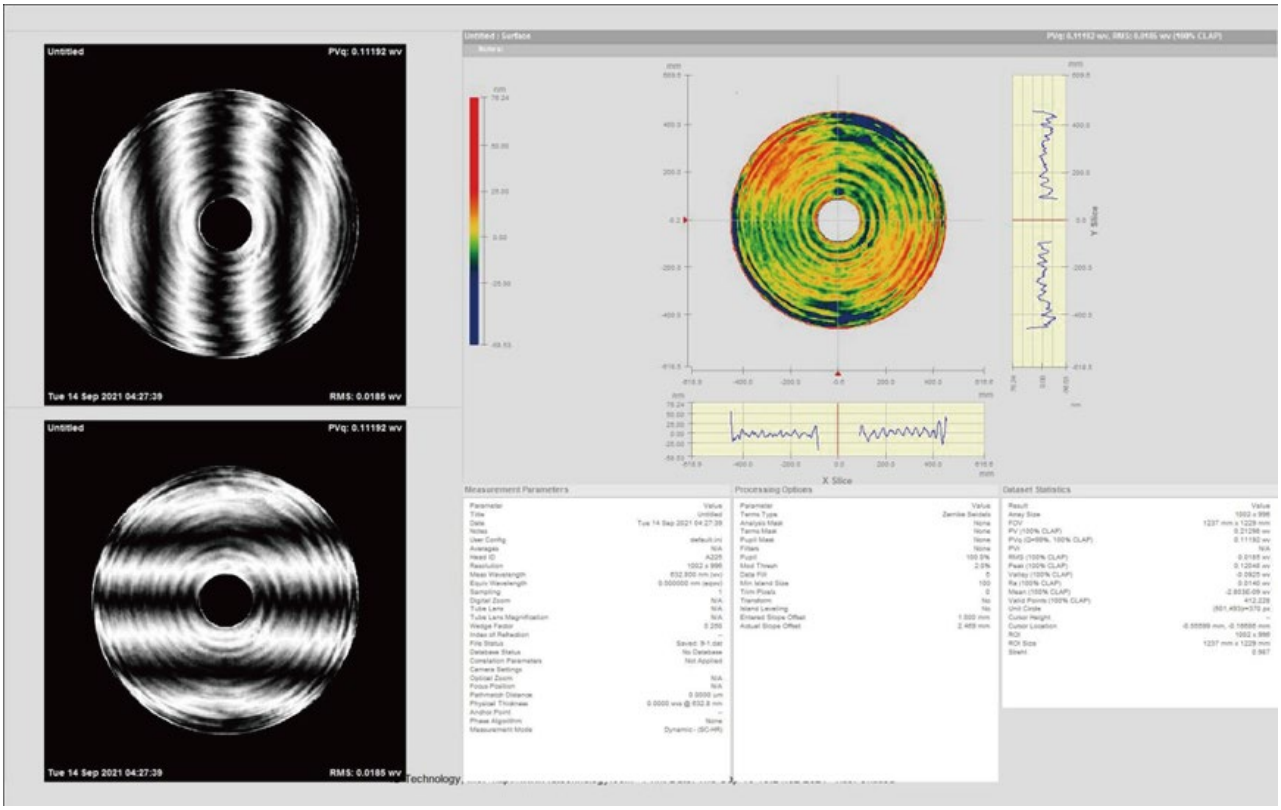


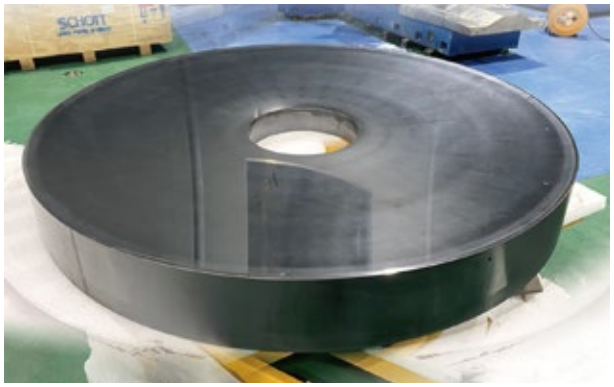


Spherical lens

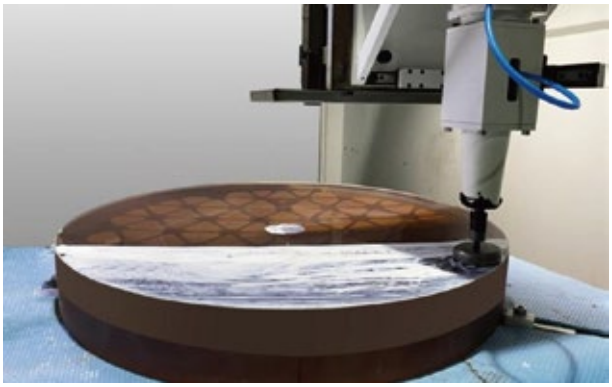
Name	Inspection results	Inspection result		Inspection item	Inspection results	
		1#	2#		1#	2#
428mm lightweight reflector	Outer diameter of A	Φ427.9979	Φ428.0565	Cylindricity of back hole	0.0119	0.0097
	Polished aperture	Φ425.7579	Φ425.9765	Coaxiality between outer circle and reference surface A	Φ0.0934	Φ0.0935
	Center thickness	84.0648	84.0981	Coaxiality between center hole and reference surface A	Φ0.0160	Φ0.0228
	Total thickness	104.5900	104.6821	Flatness of back	0.0027	0.0042
	Edge thickness	27.5253	27.4439	Perpendicularity of back (reference surface A)	0.0117	0.0065
	Vector height	20.3642	20.5840	Coaxiality between reflecting surface' s optical axis and Φ120 surface	Guaranteed by machining	Guaranteed by machining
	Diameter of center hole	Φ75.2480	Φ75.2239	Perpendicularity between reflecting surface' s optical axis and reference surface B		
	Diameter of back hole	Φ120.0145	Φ120.0031	R value	1099.9303	1099.7455
	Depth of back hole	68.0482	68.0466	kK value	Guaranteed by machining	Guaranteed by machining
	Diameter of back circle	Φ170.80	Φ171.50	Roughness		
	Cylindricity of center hole	0.0062	0.0122	Weight	16254.0g	16252.5g

Surface flatness precision value:

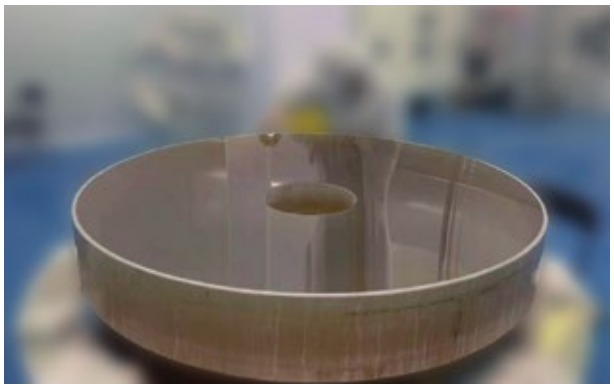




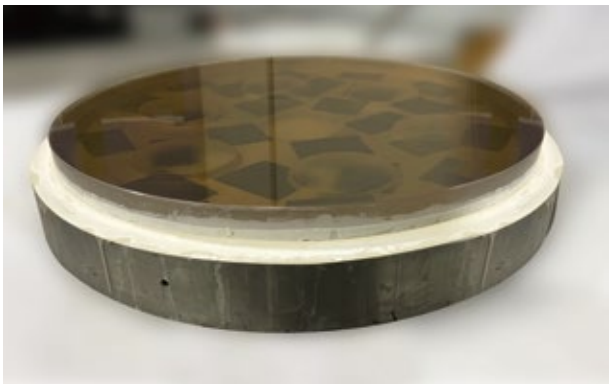
SiC aspheric reflector



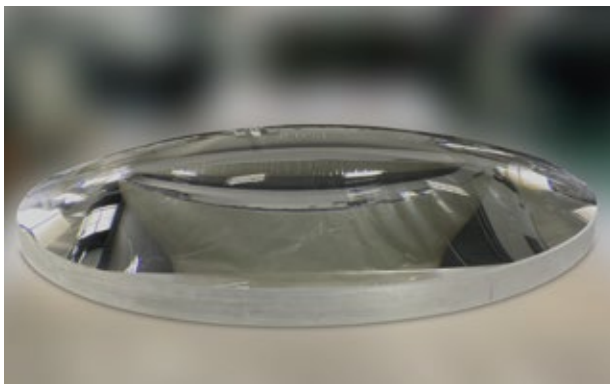
Off-axis high-order aspheric primary mirror



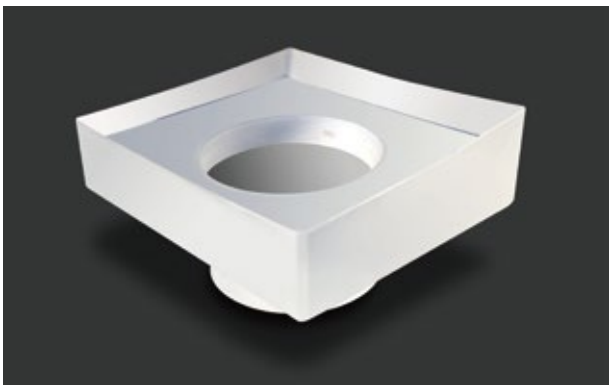
Coaxial parabolic primary mirror



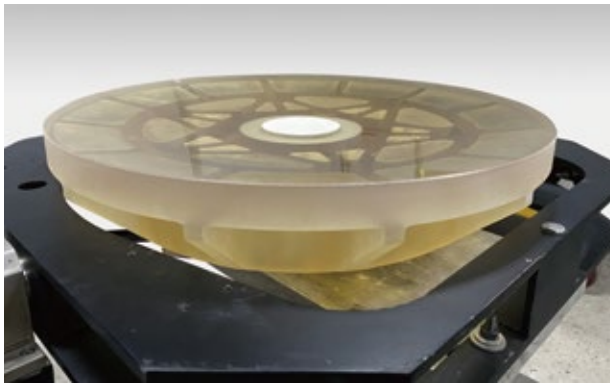
off-axis Elliptical primary mirror



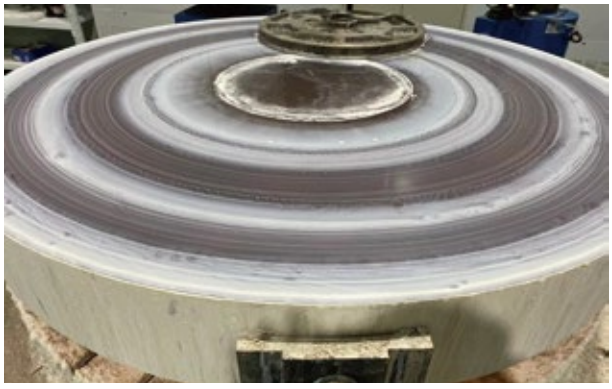
Spherical lens



Off-axis reflector



Lightweight reflector



Plane mirror


CHENGYOU Five-axis CNC engraving and milling machine


Three-axis engraving and milling machine


2m circular polishing machine

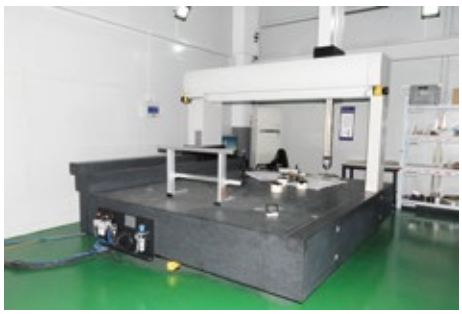

CNC single-axis machine


NTG IBF-300 polishing equipment imported from


CCOS small grinding head


CNC grinding and polishing machine


2.2m coating machine

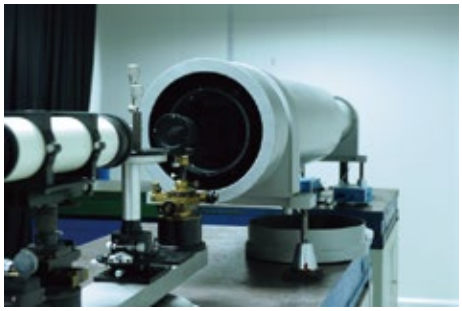


2m Zeiss PRISMO

600mm laser plane flat interferometer

轮廓仪LuphoScan420SD

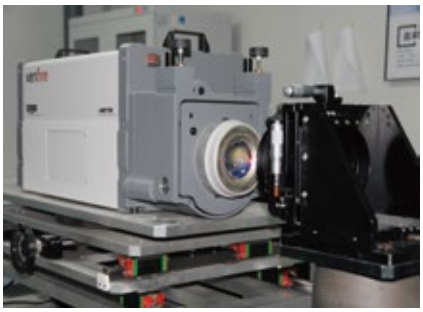
INTERFERO interferometer



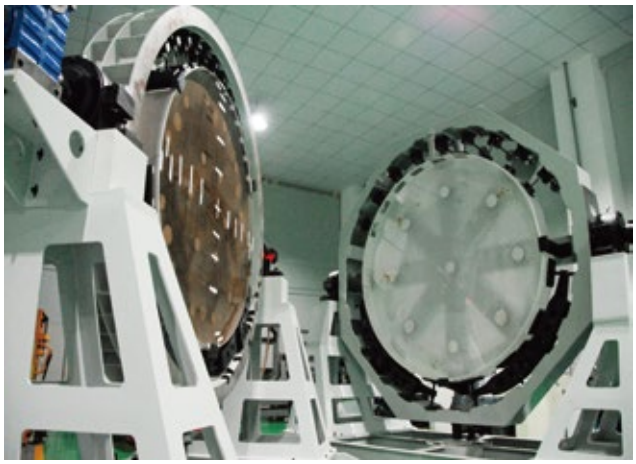
Collimator

4D interferometer 6000

4D interferometer 4020

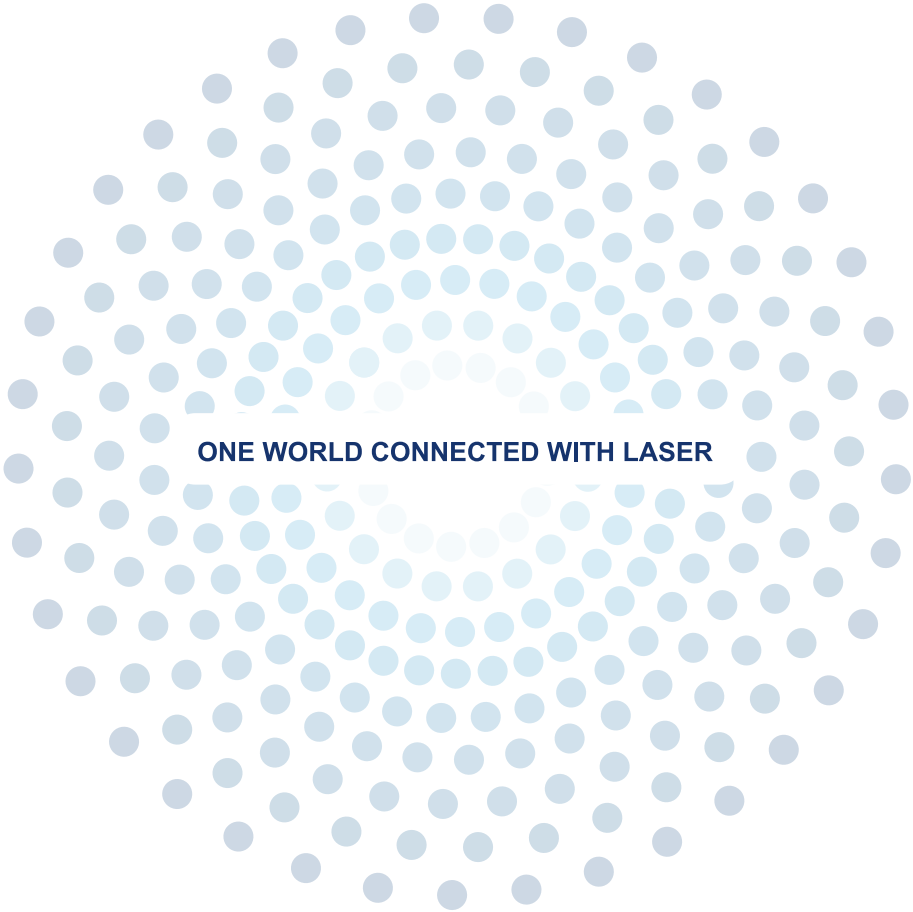


4"ZYGO digital wave flat interferometer



1.8m plane detection mirror

3D adjusting bracket



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Complete Machine Division: 00-86-25-82227290