大恒光电
Daheng Optics

NEW PRODUCTS

WE FOCUS ON OPTICS

大恒光电 | 大恒新纪元科技股份有限公司
Daheng Optics | Daheng New Epoch Technology,Inc.

Address:#A9 Shangdi Xinxilu，Haidian District，Beijing 100085，China
Tel:+861082782668
Fax:+861082782669
Email:sales@cdhcorp.com.cn
Website:http://www.cdhoptics.com

Daheng New Epoch Technology，Inc.

www.cdhoptics.com

PREFACE

Daheng Optics based in Bejing,China,is a technical company specialized in optics.Its main business includes design and manufacture of optical comonents,mdules,sub-systems assemblies and systems.Wealthy experiences in engineering and production,and service flexibility have been meeting our customer demands since 1987.Our company has grown steadily,up to now 150 people employed.Lead by an experienced technical team,most employees are skilled technicans for professionally dealing on fine optics,fine mechanics and special tools. Qualified technical department inspects our products at 100% level for quality control.

Research and Development

Daheng Optics possesses a strong professional design team for research and development with lens designers, mechanical design, control and integration engineers. Utilizing professional tools such as ZEMAX and ProE, the core design and engineering team offers solutions for OEM projects and products.

We serve and support our customers over the complete engineering cycle, from the conceptual design phase to the final delivery of the systems.

Optical Manufacture

Raw Materials

Lens blanks made of optical materials in the form of round disks or per-forms are received. We use approximately 200 different optical quality glass type, including fused silica, calcium fluoride, germanium, zinc sulfide and filter glasses.

Pre-grinding

Lens blanks (round disks or pre-forms) are pre-grinded with diamond fitted tools, each side separately to meet different curvature requirements.

Fine-grinding

Fine-grinding of the lens to the required radii is done with specialized tools, onto which pellets are glued. Diamond grains sized between 5 to 25 microns are sintered in these pellets.

Polishing

Tools lathed of aluminum and plated with a polyurethane foil for polishing the radii of the lens are used.The foils glued onto the tools are prepared by special counter tools to achieve the required precision.Cerium oxide is mainly used as the polishing medium.We use an in-process interferometer to conduct contact-free measurement for lens surface.The measurement results are used for adjusting the tools to achieve the requirements.

Centering

After the polishing of both radii, the lens has to be centered to its optical axis. For this purpose, a laser beam is launched to the lens, of which its optical axis is precisely aligned to a centering machine. A chuck is used to fit its position and its rim is ground centrically using one or two diamond grinding discs. During the same process, the chamfers are also centered.

Coating

Each lens surface in contact with air passes approximately 96% of the light due to reflection. Therefore, optical surfaces are commonly coated with a thin dielectric film to enhance the light transmission. Anti-reflection coating generally consists of 1 to 5 layers (in special cases up to 50 layers) and reduces reflection losses down to 0.2%. The coated films need to be specially adjusted to the required wavelengths and glass types. We offer anti-reflection coating for wavelength range from 350nm to 1800nm, as well as band pass filters, mirror-and beam splitter coatings and Dichroic filters.

Mechanical Mounts and Housings

We supply mounting plates or housings for optical components by precision CNC machining. Surfaces of the most mechanical components are commonly anodized black to reduce stray light in optical systems.)

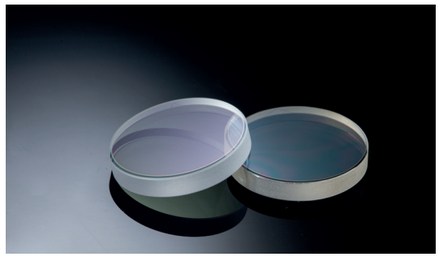
Quality Control

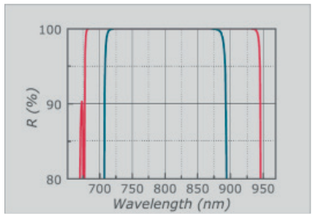
In order to assure the high quality of our products, Daheng Optics is certified according to DIN and IS09001 :2008 for quality assurance. We conduct 100% quality inspection for our products. Sophisticated measurement instruments and tools are used to guarantee our promises. Continuous improvement is carried out in the company.

CATALOGUE

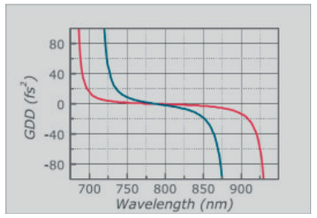
GCCH-10152 Low GDD Ultrafast Laser Dielectric Mirrors

Mirrors provide reflectance higher than 99.5 % and low GDD in a wavelength range of 200 nm centered at 800 nm with p-polarized light. Mirrors are ideal for various of ultrafast short pulses lasers applications.





45° reflectance curve for P-polarized light (Blue) and S-polarized light (red)



45°GDD curve for P-polarized light (Blue) and S-polarized light (red)

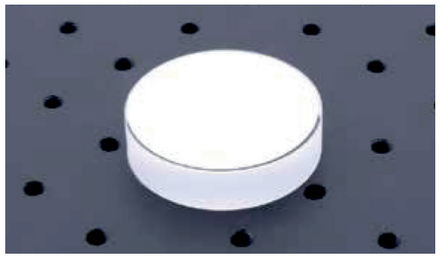
GCCH-10152 Low GDD Ultrafast Laser Dielectric Mirrors：

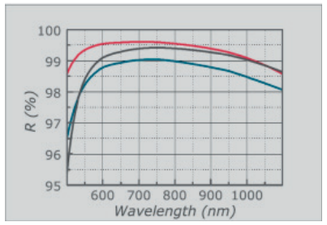
Part No.	GCCH-101522	GCCH-101525
Coating	P-polarized：R>99.5% @720(±10)nm-880(±10)nm； S-polarized：R>99.5% @680(±10)nm-930(±10)nm；	
AOI	45°	
Flatness	λ/10	
Surface Quality	40-20 scratch-dig	
Diameter	25.4mm	50.8mm
Thickness	6.35mm	12mm
Wedge angle	5 arc min	
Material	BK7	

*For custom dimension options, please contact our Sales Department.

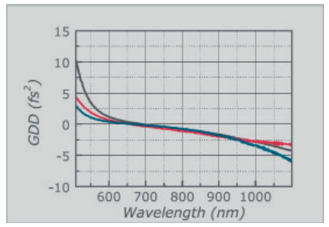
GCCH-10153 Ultrafast Laser Enhanced Silver Mirrors

Ultrafast laser enhanced silver mirrors, compared with the dielectric mirrors, can achieve higher reflectance in a wide spectrum. Through a special coating process, its reflection efficiency is close to that of the dielectric mirrors. In particular, high reflection efficiency and low GDD can be achieved in a wide range of 0-45 degrees.





Reflectance curve for an angle of incidence of 0° (black) and 45 ° (red: S- polarized, blue: P-polarized)

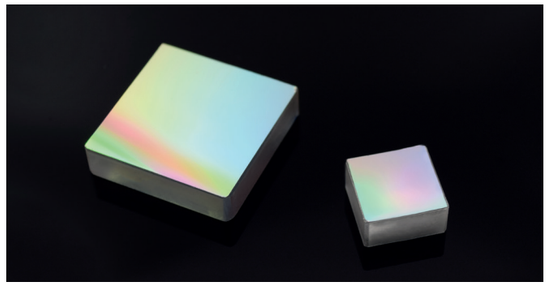


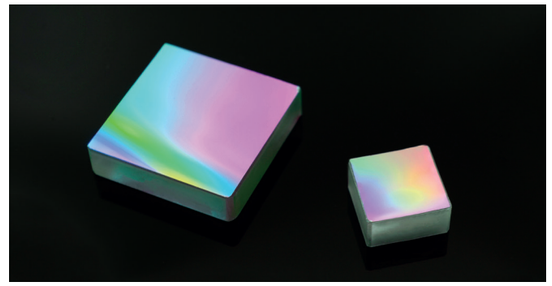
GDD curve for an angle of incidence of 0° (black) and 45° (red: S- polarized, blue: P-polarized)

GCCH-10153 Ultrafast Laser Enhanced Silver Mirrors:

Part No	GCCH-101532	GCCH-101535
Coating	R>99 %@600nm-1000nm, AOI 0° P-polarized：R>98.5%@580nm-1000nm, AOI 45°， S-polarized：R>99%@540nm-1000nm, AOI 45° -5 fs^2 < GDD < 5 fs^2 @550 nm-1050 nm, AOI 0° -45°	
Flatness	λ/10	
Surface quality	40-20 scratch-dig	
Diameter	25.4mm	50.8mm
Thickness	6.35mm	12mm
Wedge angle	<5 arc min	

GCG-Plane Diffraction Grating

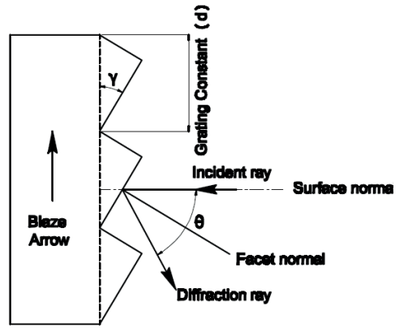




Grating is a common optical dispersion component. It is an object or device that has a spatial periodic distribution within a certain spatial range and can amplitude modulation or (and) position phase modulation of electromagnetic waves according to certain laws. According to the usage, the grating can be divided into transmission gratings and reflection gratings, and reflective gratings can be divided into plane reflection gratings, concave reflective gratings, echelle gratings, etc.

GCG series grating is one of the plane reflective gratings, which is characterized by the maximum diffraction light intensity-level glare falling outside the zero-stage spectrum, so it is called the blazed grating. For serrated grooves, the direction with the greatest light intensity is the direction of the groove surface determined by the law of reflection.

Daheng Optics provides a blazed grating with a lithography of 300-1200 lines within a range of 360nm-1250nm. At the blazed wavelength, the grating diffraction efficiency can reach 60% to 80%. It has two dimensions of 12.5mmx12.5mm and 25mmx25mm. The back of the grating is polished, and the side is marked with an arrow indicating the direction of the grating, as shown in the schematic diagram below. The damage threshold of this series of gratings is typically tested at 532nm, about 150mJ/cm2 (532nm, 10ns, 10Hz). Please note not to exceed the laser threshold during use.



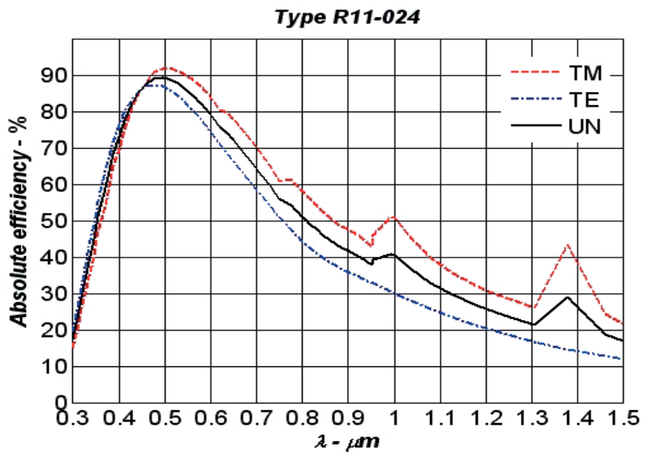
The surface of the grating is engraved with precision grooves, which is very vulnerable to damage. Please place it in a clean and dry environment. Don't touch or wipe the surface of the grating when using it. When cleaning, only clean and dry air can be used.

For detailed indicators of this series of gratings, please see Schedule 1.

Part No.	Line	Blazed wavelength(um)	Blazed angle	Dimension	Tolerance	Thickness	Tolerance	Surface quality on back	Damage Threshold (532nm, 10ns, 10Hz)
GCG-300-0.5-12.5	300	0.5	4.3°	12.5x12.5	0,-0.05	4	0,-0.05	polished	150mJ/cm^2
GCG-300-0.5-25	300	0.5	4.3°	25x25	0,-0.05	6	0,-0.05	polished	150mJ/cm^2
GCG-300-1.0-12.5	300	1	8.6°	12.5x12.5	0,-0.05	4	0,-0.05	polished	150mJ/cm^2
GCG-300-1.0-25	300	1	8.6°	25x25	0,-0.05	6	0,-0.05	polished	150mJ/cm^2
GCG-600-0.36-12.5	600	0.36	6.2°	12.5x12.5	0,-0.05	4	0,-0.05	polished	150mJ/cm^2
GCG-600-0.5-12.5	600	0.5	8.6°	12.5x12.5	0,-0.05	4	0,-0.05	polished	150mJ/cm^2
GCG-600-0.5-25	600	0.5	8.6°	25x25	0,-0.05	6	0,-0.05	polished	150mJ/cm^2
GCG-600-0.72-12.5	600	0.72	12.5°	12.5x12.5	0,-0.05	4	0,-0.05	polished	150mJ/cm^2
GCG-600-0.72-25	600	0.72	12.5°	25x25	0,-0.05	6	0,-0.05	polished	150mJ/cm^2
GCG-600-1.0-12.5	600	1	17.5°	12.5x12.5	0,-0.05	4	0,-0.05	polished	150mJ/cm^2
GCG-600-1.0-25	600	1	17.5°	25x25	0,-0.05	6	0,-0.05	polished	150mJ/cm^2
GCG-600-1.25-12.5	600	1.25	22.0°	12.5x12.5	0,-0.05	4	0,-0.05	polished	150mJ/cm^2
GCG-600-1.25-25	600	1.25	22.0°	25x25	0,-0.05	6	0,-0.05	polished	150mJ/cm^2
GCG-600-1.6-12.5	600	1.6	28.7°	12.5x12.5	0,-0.05	4	0,-0.05	polished	150mJ/cm^2
GCG-600-1.6-25	600	1.6	28.7°	25x25	0,-0.05	6	0,-0.05	polished	150mJ/cm^2
GCG-1200-0.36-12.5	1200	0.36	12.5°	12.5x12.5	0,-0.05	4	0,-0.05	polished	150mJ/cm^2
GCG-1200-0.5-12.5	1200	0.5	17.5°	12.5x12.5	0,-0.05	4	0,-0.05	polished	150mJ/cm^2
GCG-1200-0.5-25	1200	0.5	17.5°	25x25	0,-0.05	6	0,-0.05	polished	150mJ/cm^2
GCG-1200-0.72-12.5	1200	0.72	25.6°	12.5x12.5	0,-0.05	4	0,-0.05	polished	150mJ/cm^2
GCG-1200-0.72-25	1200	0.72	25.6°	25x25	0,-0.05	6	0,-0.05	polished	150mJ/cm^2
GCG-1200-1.0-12.5	1200	1	36.9°	12.5x12.5	0,-0.05	4	0,-0.05	polished	150mJ/cm^2
GCG-1200-1.0-25	1200	1	36.9°	25x25	0,-0.05	6	0,-0.05	polished	150mJ/cm^2

Schedule1

The efficiency curve of this series of gratings is shown in Schedule 2. The diffraction efficiency is measured under the Littrow structure at m=1



Schedule2

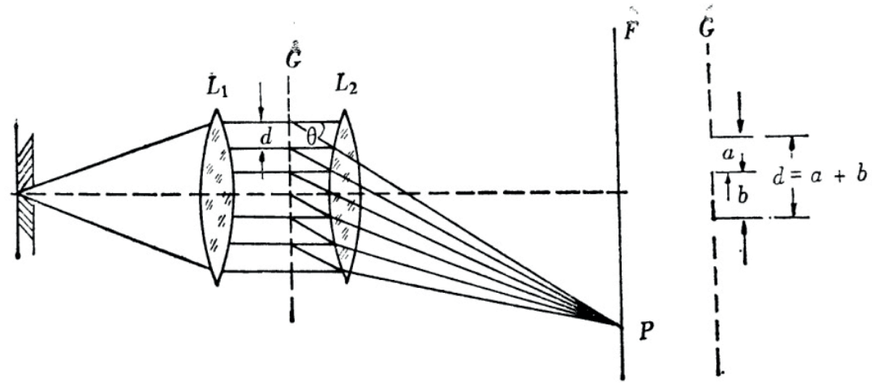
The following is a brief introduction to its basic principle and grating equation.

1. Basic characteristics of grating

Due to the spatial periodicity of the grating structure, there are a large number of equal width, equal spacing and parallel slits (or notches), so the diffraction fringes of the grating are the total effect of multi slit interference and single slit diffraction, and the diffraction pattern of the grating is the result of the intensity distribution of multi slit interference being emphasized by the single slit diffraction light.

In Figure 1, S is a sewing light source, which is on the focal plane of lens L1. If the spindle of L1 passes through the center line of the slit and parallels with each other, the sewing light source outputs parallel light after passing through L1. G is a grating, which has a transmission seam with numberous width of “a”, and a width of b for the non-permeable part of the adjacent slits. The parallel light ejected from L1 shone vertically on part of the adjacent slits. The parallel light ejected from L1 shone vertically on the grating G, and the lens L2 will focus at the P of the L2 focal plane F at anθangle in the direction of the grating normal. The conditions for producing bright stripes at P are:

$$d\sin\theta=k\lambda \quad (1)$$



This is what we usually call the grating equation. In the equation, θ is the diffraction angle, λ is the wavelength of the light source used, k is the order of the spectrum (k=0, ±1, ±2,…..), d=a+b, and is the grating constant.

When the diffraction angle is θ=0, the order k=0, and any wavelength satisfies the great conditions there, so the center bright stripes appear at θ=0. For other values of k, the symbol “±” represents two sets of spectra, which are symmetrically distributed from the center bright stripe to left and right.

If the parallel light ejected from L1 is not perpendicular to the surface of the grating, the grating equation shall be written as:

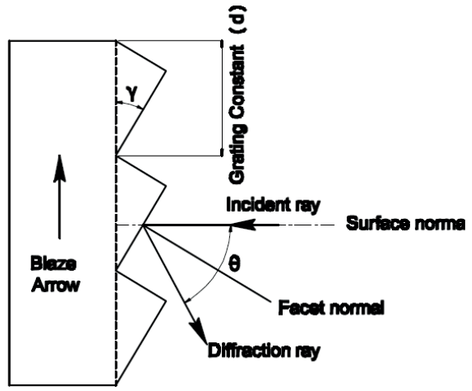
$$d(\sin\theta-\sin i)=k\lambda \quad (2)$$

Type i is the angle between incident light and grating normal. When using formula (1), be sure to ensure vertical incident of parallel light, otherwise formula (2) must be used.

2. Blazed grating

Blazed grating is a reflection grating whose structure is shown in Figure 2. It is made of a series of parallel serrated grooves on the substrate material, and then coated with a high reflective film on its surface.

Figure 2:



The general equation of the blazed grating is:

$$d\,(\sin i+\sin\theta)=m\,\lambda \quad (3)$$

$$m\lambda_B=2d\sin\gamma\cos\,(\gamma-i) \quad (4)$$

Grating constant “d”: the length of the groove periodic interval, as shown in the figure above.

Engraving number “N”: refers to the number of lines in the 1mm groove, which is related to the grating constant d.

Shining angle “γ”: the angle between the grating plane and the groove surface, as shown in the figure above.

Entry angle “I”: the angle between incident light and raster normal.

Diffraction angle “θ”: the angle between diffraction light and the grating normal, as shown in the figure above.

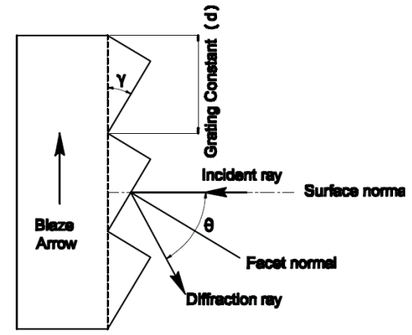
Shining wavelength “λB”: when the grating constant “d”, the glare angle”γ”, and the incident angle”I” are determined, at a diffraction level “m”, only one wavelength can satisfy the above equation (4), which is called the blazed wavelength under this level.

Blazed gratings usually use m=1 and m=2 spectra. When taking m=1, there are two special light paths.

The beam is perpendicular to the surface of the grating, and the incident angle i=0, as shown in Figure 3, can get:

$$d\sin\theta=\lambda_B \qquad \theta=2\gamma$$

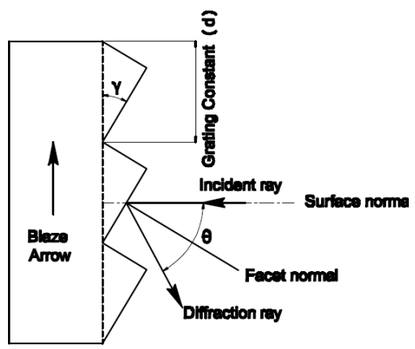
Figure 3:



When the beam is incident at a blazed angle, that is, perpendicular to the groove plane, it is the LITTROW structure shown in Figure 4. LITTROW structure is widely used in spectrometers, laser resonators and other devices, which are characterised by simple and stable structure and high diffraction efficiency, so that the equipment can obtain higher output power. At this point, the incident angle “I” is equal to the diffraction angle “γ”, and you can get:

$$2d\sin\gamma=\lambda_B$$

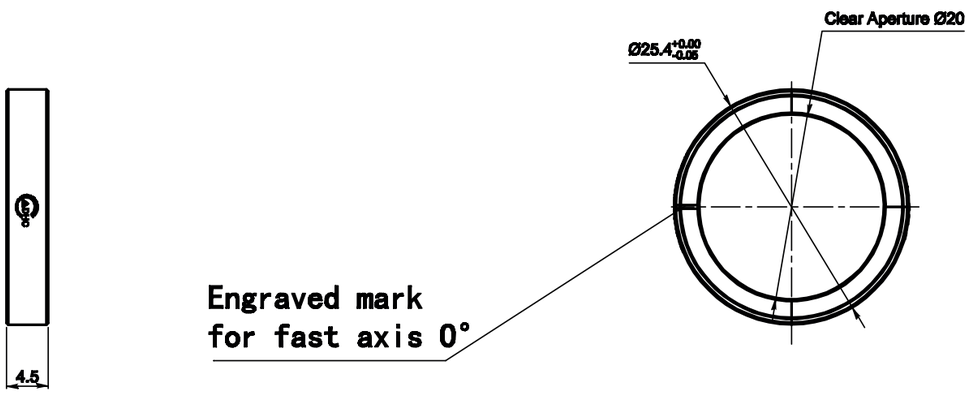
Figure 4:



GCL-0602 Zero-Order Vortex Half-Wave Retarders

Daheng Optics' Vortex Retarders are half-wave retarders designed to affect the radial and azimuthal polarization of optical fields. A vortex retarder has a constant retardance across the clear aperture but its fast axis rotates continuously over the area of the optic. These retarders are mounted in Ø 25.4 mm housing with an engraving along the perimeter to assist in locating the center point of the plate for beam alignment purposes. The m=1 retarders have an additional mark, denoted by 2 lines, to indicate the orientation of the zero-degree fast axis. Daheng Optics offers the standard vortex retarders with m=1, 2, 3, 4 & 5 order. Additionally, they are compatible with beam diameters from 0.1 mm to 20 mm.

Vortex retarders generate nondiffracting, or Bessel, beams, which have been demonstrated to enlarge the trapping region of optical tweezers. Specifically, these retarders convert standard TEM00 Gaussian beams into so-called "donut hole" Laguerre-Gaussian modes. Vortex retarders should be used at a single wavelength close to the design wavelength; the donut beam profile will degrade as the deviation from the design wavelength increases.



GCL-0602 Zero-Order Vortex Half-Wave Retarders

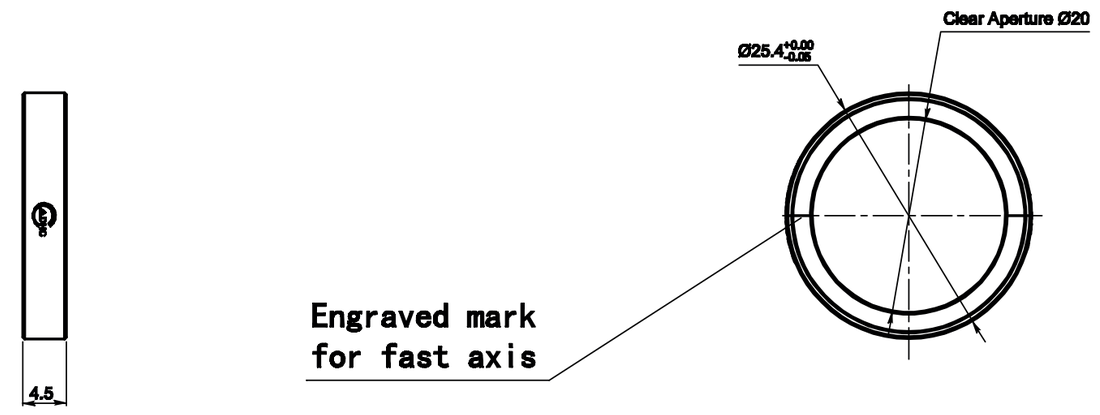
Part No.	Wavelength	Order	Clear Aperture	Outside Diameter
GCL-060201-m1	405nm	m=1	20mm	25.4mm
GCL-060202-m1	532nm	m=1	20mm	25.4mm
GCL-060203-m1	633nm	m=1	20mm	25.4mm
GCL-060204-m1	795nm	m=1	20mm	25.4mm
GCL-060205-m1	808nm	m=1	20mm	25.4mm
GCL-060207-m1	1064nm	m=1	20mm	25.4mm
GCL-060209-m1	1550nm	m=1	20mm	25.4mm
GCL-060201-m2	405nm	m=2	20mm	25.4mm
GCL-060202-m2	532nm	m=2	20mm	25.4mm
GCL-060203-m2	633nm	m=2	20mm	25.4mm
GCL-060204-m2	795nm	m=2	20mm	25.4mm
GCL-060205-m2	808nm	m=2	20mm	25.4mm
GCL-060207-m2	1064nm	m=2	20mm	25.4mm
GCL-060209-m2	1550nm	m=2	20mm	25.4mm
GCL-060203-m3	633nm	m=3	20mm	25.4mm
GCL-060203-m4	633nm	m=4	20mm	25.4mm
GCL-060203-m5	633nm	m=5	20mm	25.4mm
GCL-060203-m6	633nm	m=6	20mm	25.4mm

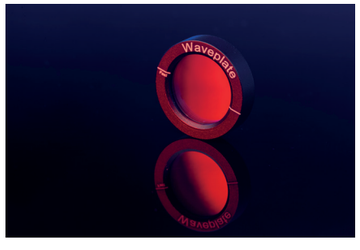
Specifications	
Retardance:	λ/2
Transmission:	>98%
Angles of Incidence:	±20°
Surface quality:	40/20 S/D
Retardance Accuracy:	<λ/100
Beam Deviation:	<10 arcsec
Outside Diameter:	25.4+0/-0.05 mm
Thickness:	4.5±0.3 mm
Temperature Range:	-20°C ~60°C
Substrate Material:	Fused Silica

GCL-0605 Polymer Zero-Order Waveplates

Daheng Optics' Polymer Zero-Order Waveplates are fabricated from a liquid crystal polymer (LCP), which is laminated between two precision Fused Silica windows, with options of standard λ/4 and λ/2 for common visible and NIR wavelengths. To achieve the high transmission, the outsides of glass plates have a broadband AR coating. LCP waveplates are mounted in housing with Ø 25.4mm. The mounted waveplates are epoxied into the housing; attempting to remove the waveplate from the housing may result in damage to the waveplate.

Comparing the standard quartz waveplates, LCP waveplates can provide stable performance over a range of wavelengths and a large range of angles of incidence. This design is advantageous for applications that require low sensitivity to AOI. Due to the cemented construction and polymer material, these waveplates are not recommended for high power laser use.





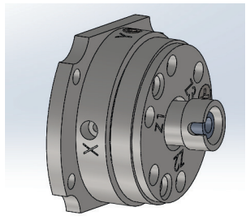
GCL-0605 Polymer Zero-Order Waveplates：

Part NO.	Wavelength	Retardance	Clear Aperture	Outside Diameter
GCL-060501	405nm	λ/4	20mm	25.4mm
GCL-060502	532nm	λ/4	20mm	25.4mm
GCL-060503	633nm	λ/4	20mm	25.4mm
GCL-060504	795nm	λ/4	20mm	25.4mm
GCL-060505	808nm	λ/4	20mm	25.4mm
GCL-060506	980nm	λ/4	20mm	25.4mm
GCL-060507	1064nm	λ/4	20mm	25.4mm
GCL-060508	1030nm	λ/4	20mm	25.4mm
GCL-060509	1550nm	λ/4	20mm	25.4mm
GCL-060511	405nm	λ/2	20mm	25.4mm
GCL-060512	532nm	λ/2	20mm	25.4mm
GCL-060513	633nm	λ/2	20mm	25.4mm
GCL-060514	795nm	λ/2	20mm	25.4mm
GCL-060515	808nm	λ/2	20mm	25.4mm
GCL-060516	980nm	λ/2	20mm	25.4mm
GCL-060517	1064nm	λ/2	20mm	25.4mm
GCL-060518	1030nm	λ/2	20mm	25.4mm
GCL-060519	1550nm	λ/2	20mm	25.4mm

Specifications	
Transmission：	>98%
Angles of Incidence：	±15°
Surface quality：	40/20 S/D
Retardance Accuracy：	<λ/100
Beam Deviation：	<10 arcsec
Outside Diameter：	25.4+0/-0.05mm
Thickness：	4.5±0.3mm
Temperature Range：	-20°C to 60°C
Substrate Material：	Fused Silica

GCX-C FiberPort Couplers

GCX-C FiverPort Couplers have compact structures, which allow to make precise adjustment at five degrees of freedom in very small space. They can be aligned ±0.5mm for linear, ±4 ° for angular , and 2mm along the optical axis. They are available with FC/PC，FC/APC，and SMA adaptors. They also assembled lenses with different effective focal length (6mm, 15mm, and 18mm). Two types of coatings are suitable for 600-1050nm and 1050-1600nm.



▲ AR coating: Visible and NIR
▲ Three types of effective focal length (EFL): 6mm, 15mm, 18mm
▲ Connectors: FC/PC, FC/APC, SMA
▲ Material: Stainless steel

Part No.	EFL	NA	Aperture	AR Coating	Connector	Size
GCX-C18APC-B	18.4	0.15	5.5mm	AR600-1050nm	FC/APC	Ø38*26.5
GCX-C18PC-B	18.4	0.15	5.5mm	AR600-1050nm	FC/PC	Ø38*26
GCX-C18SMA-B	18.4	0.15	5.5mm	AR600-1050nm	SMA	Ø38*26
GCX-C15APC-C	15.4	0.16	5.5mm	AR1050-1600nm	FC/APC	Ø38*23
GCX-C15PC-C	15.4	0.16	5.5mm	AR1050-1600nm	FC/PC	Ø38*23
GCX-C15SMA-C	15.4	0.16	5.5mm	AR1050-1600nm	SMA	Ø38*23
GCX-C18APC-A	18.4	0.15	5.5mm	AR400nm-650nm	FC/APC	Ø38*26.5
GCX-C18PC-A	18.4	0.15	5.5mm	AR400nm-650nm	FC/PC	Ø38*26
GCX-C18SMA-A	18.4	0.15	5.5mm	AR400nm-650nm	SMA	Ø38*26
GCX-C6APC-A	6.7	0.5	5mm	AR400nm-650nm	FC/APC	Ø38*22
GCX-C6PC-A	6.7	0.5	5mm	AR400nm-650nm	FC/PC	Ø38*21.8
GCX-C6SMA-A	6.7	0.5	5mm	AR400nm-650nm	SMA	Ø38*25.4
GCX-C6APC-B	6.7	0.5	5mm	AR600-1050nm	FC/APC	Ø38*22
GCX-C6PC-B	6.7	0.5	5mm	AR600-1050nm	FC/PC	Ø38*21.8
GCX-C6SMA-B	6.7	0.5	5mm	AR600-1050nm	SMA	Ø38*25.4
GCX-C6APC-C	6.7	0.5	5mm	AR1050-1600nm	FC/APC	Ø38*22
GCX-C6PC-C	6.7	0.5	5mm	AR1050-1600nm	FC/PC	Ø38*21.8
GCX-C6SMA-C	6.7	0.5	5mm	AR1050-1600nm	SMA	Ø38*25.4

GCX-LF Aspheric Fiber Collimators

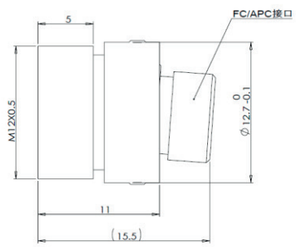
GCX-LF Aspheric Fiber collimator have compact structures, which assemble a single aspheric lens aligned for collimation at the design wavelength when they connected specified single mode fiber.

▲ AR coating: A: R<0.5%@350-750nm; B: R<0.5%@700-1100nm; C:R<0.5%@1050-1700nm
▲ Effective Focal Length (EFL): 4mm, 6mm, 11mm, 15mm, 18mm
▲ Full angle Divergence<=0.12°
▲ Adaptor(Ad.): FC/PC, FC/APC, SMA
▲ Material: Stainless steel

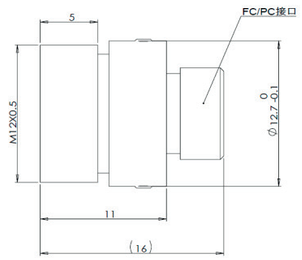
Part No.	Ad.	EFL	AR	Wave (nm)	NA	Dia. (MFD)	Full Angle Divergence (°)	Waist Dia. (mm)	Size	External Threading
GCX-LF4APC-405	APC	4.45	A	405	0.53	3.3	0.042	0.695	Φ12.7x15.7	M12X0.5
GCX-LF6APC-532	APC	6.09	A	532	0.4	4	0.038	1.031	Φ12.7x19	M12X0.5
GCX-LF6APC-633	APC	6.17	A	633	0.4	4.6	0.043	1.081	Φ12.7x18.7	M12X0.5
GCX-LF6APC-780	APC	6.24	B	780	0.4	4.8	0.044	1.291	Φ12.7x18.7	M12X0.5
GCX-LF6APC-980	APC	6.29	B	980	0.4	6.4	0.058	1.226	Φ12.7x18.7	M12X0.5
GCX-LF6APC-1064	APC	6.31	C	1064	0.4	7	0.064	1.221	Φ12.7x18.7	M12X0.5
GCX-LF6APC-1550	APC	6.38	C	1550	0.4	10.4	0.093	1.211	Φ12.7x18.7	M12X0.5
GCX-LF11APC-532	APC	10.9	A	532	0.25	3.6	0.019	2.051	Φ12.7x23.7	M12X0.5
GCX-LF11APC-633	APC	11	A	633	0.25	4.6	0.024	1.927	Φ12.7x23.7	M12X0.5
GCX-LF11APC-780	APC	11.1	B	780	0.25	4.9	0.025	2.250	Φ12.7x23.7	M12X0.5
GCX-LF11APC-980	APC	11.2	B	980	0.25	5.5	0.028	2.541	Φ12.7x23.7	M12X0.5
GCX-LF11APC-1064	APC	11.2	C	1064	0.25	6.4	0.033	2.371	Φ12.7x23.7	M12X0.5
GCX-LF11APC-1550	APC	11.3	C	1550	0.25	10.4	0.053	2.144	Φ12.7x23.7	M12X0.5
GCX-LF15APC-633	APC	15.17	A	633	0.16	4.6	0.017	2.658	Φ12.7x28.3	M12X0.5
GCX-LF15APC-780	APC	15.3	B	780	0.16	4.8	0.018	3.166	Φ12.7x28.3	M12X0.5
GCX-LF15APC-1064	APC	15.43	C	1064	0.16	7	0.026	2.986	Φ12.7x28.3	M12X0.5
GCX-LF15APC-1550	APC	15.6	C	1550	0.16	10.4	0.038	2.960	Φ12.7x28.3	M12X0.5
GCX-LF18APC-780	APC	18.4	B	780	0.15	4.8	0.015	3.807	Φ12.7x29.2	M12X0.5
GCX-LF18APC-980	APC	18.52	B	980	0.15	6.4	0.020	3.611	Φ12.7x29.2	M12X0.5

Part No.	Ad	EFL	AR	Wave (nm)	NA	Dia. (MFD)	Full Angle Divergence (°)	Waist Dia. (mm)	Size	External Threading
GCX-LF4PC-405	PC	4.45	A	405	0.53	3.3	0.042	0.695	Φ12.7x16	M12X0.5
GCX-LF6PC-532	PC	6.09	A	532	0.4	4	0.038	1.031	Φ12.7x19	M12X0.5
GCX-LF6PC-633	PC	6.17	A	633	0.4	4.6	0.043	1.081	Φ12.7x19	M12X0.5
GCX-LF6PC-780	PC	6.24	B	780	0.4	4.8	0.044	1.291	Φ12.7x19	M12X0.5
GCX-LF6PC-980	PC	6.29	B	980	0.4	6.4	0.058	1.226	Φ12.7x19	M12X0.5
GCX-LF6PC-1064	PC	6.31	C	1064	0.4	7	0.064	1.221	Φ12.7x19	M12X0.5
GCX-LF6PC-1550	PC	6.38	C	1550	0.4	10.4	0.093	1.211	Φ12.7x19	M12X0.5
GCX-LF11PC-532	PC	10.9	A	532	0.25	3.6	0.019	2.051	Φ12.7x24	M12X0.5
GCX-LF11PC-633	PC	11	A	633	0.25	4.6	0.024	1.927	Φ12.7x24	M12X0.5
GCX-LF11PC-780	PC	11.1	B	780	0.25	4.9	0.025	2.250	Φ12.7x24	M12X0.5
GCX-LF11PC-980	PC	11.2	B	980	0.25	5.5	0.028	2.541	Φ12.7x24	M12X0.5
GCX-LF11PC-1064	PC	11.2	C	1064	0.25	6.4	0.033	2.371	Φ12.7x24	M12X0.5
GCX-LF11PC-1550	PC	11.3	C	1550	0.25	10.4	0.053	2.144	Φ12.7x24	M12X0.5
GCX-LF15PC-633	PC	15.17	A	633	0.16	4.6	0.017	2.658	Φ12.7x28.6	M12X0.5
GCX-LF15PC-780	PC	15.3	B	780	0.16	4.8	0.018	3.166	Φ12.7x28.6	M12X0.5
GCX-LF15PC-1064	PC	15.43	C	1064	0.16	7	0.026	2.986	Φ12.7x28.6	M12X0.5
GCX-LF15PC-1550	PC	15.6	C	1550	0.16	10.4	0.038	2.960	Φ12.7x28.6	M12X0.5
GCX-LF18PC-780	PC	18.4	B	780	0.15	4.8	0.015	3.807	Φ12.7x29.5	M12X0.5
GCX-LF18PC-980	PC	18.52	B	980	0.15	6.4	0.020	3.611	Φ12.7x29.5	M12X0.5
GCX-LF4SMA-405	SMA	4.45	A	405	0.53	3.3	0.042	0.695	Φ12.7x19.3	M12X0.5
GCX-LF6SMA-532	SMA	6.09	A	532	0.4	4	0.038	1.031	Φ12.7x22	M12X0.5
GCX-LF6SMA-633	SMA	6.17	A	633	0.4	4.6	0.043	1.081	Φ12.7x22	M12X0.5
GCX-LF6SMA-780	SMA	6.24	B	780	0.4	4.8	0.044	1.291	Φ12.7x22	M12X0.5
GCX-LF6SMA-980	SMA	6.29	B	980	0.4	6.4	0.058	1.226	Φ12.7x22	M12X0.5
GCX-LF6SMA-1064	SMA	6.31	C	1064	0.4	7	0.064	1.221	Φ12.7x22	M12X0.5
GCX-LF6SMA-1550	SMA	6.38	C	1550	0.4	10.4	0.093	1.211	Φ12.7x22	M12X0.5
GCX-LF11SMA-532	SMA	10.9	A	532	0.25	3.6	0.019	2.051	Φ12.7x27	M12X0.5
GCX-LF11SMA-633	SMA	11	A	633	0.25	4.6	0.024	1.927	Φ12.7x27	M12X0.5
GCX-LF11SMA-780	SMA	11.1	B	780	0.25	4.9	0.025	2.250	Φ12.7x27	M12X0.5
GCX-LF11SMA-980	SMA	11.2	B	980	0.25	5.5	0.028	2.541	Φ12.7x27	M12X0.5
GCX-LF11SMA-1064	SMA	11.2	C	1064	0.25	6.4	0.033	2.371	Φ12.7x27	M12X0.5
GCX-LF11SMA-1550	SMA	11.3	C	1550	0.25	10.4	0.053	2.144	Φ12.7x27	M12X0.5
GCX-LF15SMA-633	SMA	15.17	A	633	0.16	4.6	0.017	2.658	Φ12.7x31.6	M12X0.5
GCX-LF15SMA-780	SMA	15.3	B	780	0.16	4.8	0.018	3.166	Φ12.7x31.6	M12X0.5
GCX-LF15SMA-1064	SMA	15.43	C	1064	0.16	7	0.026	2.986	Φ12.7x31.6	M12X0.5
GCX-LF15SMA-1550	SMA	15.6	C	1550	0.16	10.4	0.038	2.960	Φ12.7x31.6	M12X0.5
GCX-LF18SMA-780	SMA	18.4	B	780	0.15	4.8	0.015	3.807	Φ12.7x32.5	M12X0.5
GCX-LF18SMA-980	SMA	18.52	B	980	0.15	6.4	0.020	3.611	Φ12.7x32.5	M12X0.5

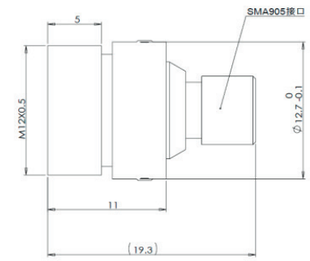
GCX-LF4(APC)：



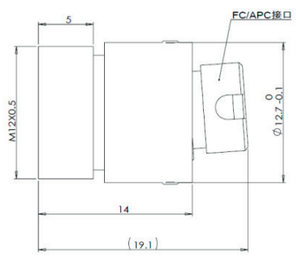
GCX-LF4(PC)：



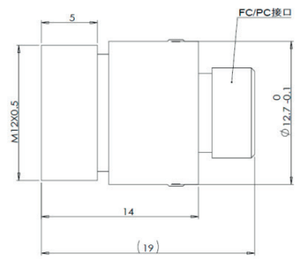
GCX-LF4(SMA)：



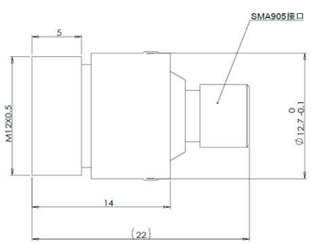
GCX-LF6(APC))：



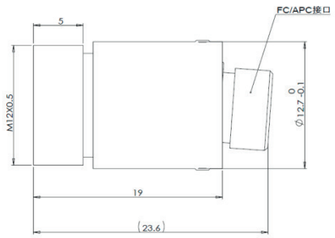
GCX-LF6(PC)：



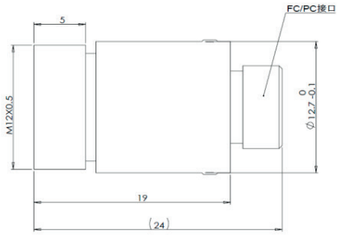
GCX-LF6(SMA)：



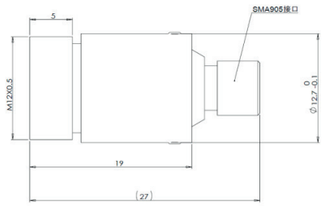
GCX-LF11(APC)：



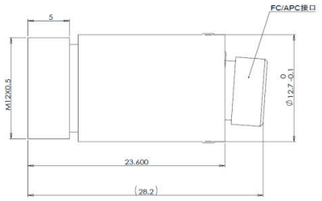
GCX-LF11(PC)：



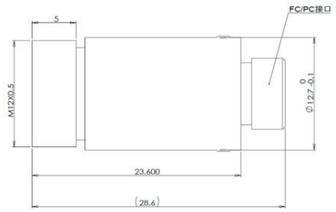
GCX-LF11(PC)：



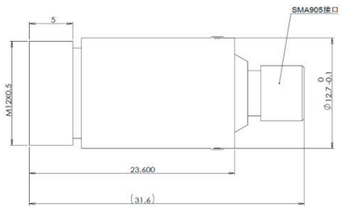
GCX-LF15(APC):



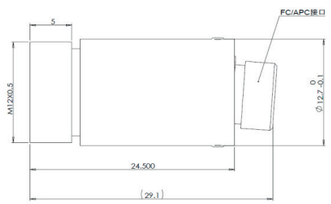
GCX-LF15(PC):



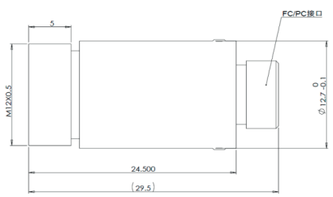
GCX-LF15(SMA)：



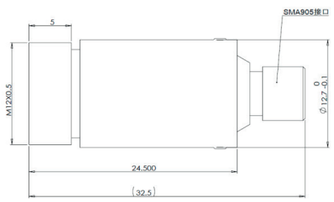
GCX-LF18(APC):



GCX-LF18(PC):



GCX-LF18(SMA)：



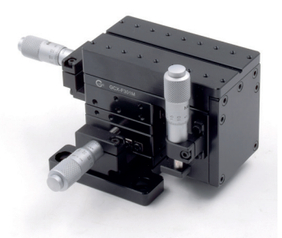
All units in mm unless otherwise specified

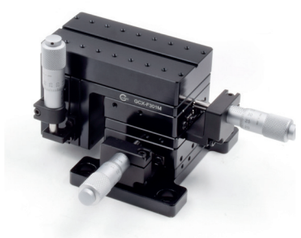
GCX-F301ML(R) Precision Fiber Optic Alignment Stages

GCX-F301ML(R) Precision Fiber Optic Alignment Stages designed for the precise and robust alignment of optical fibers. The single-dimensional pitch and yaw accuracy are both less than 10 arc sec, the movement accuracy is 0.001mm, and the adjustment is ±6.5mm. The high precision and high stability make it very suitable for applications such as fiber docking and fiber coupling. High-quality aluminum alloy material reduces weight, easy to be embedded in various systems. Rich product accessories can be matched with different application requirements.

FEATURES:

· Pitch and yaw <10 arc sec
· Left or right handed configurations



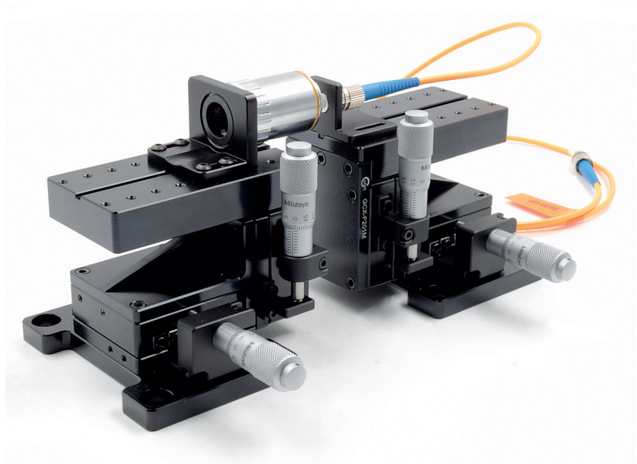


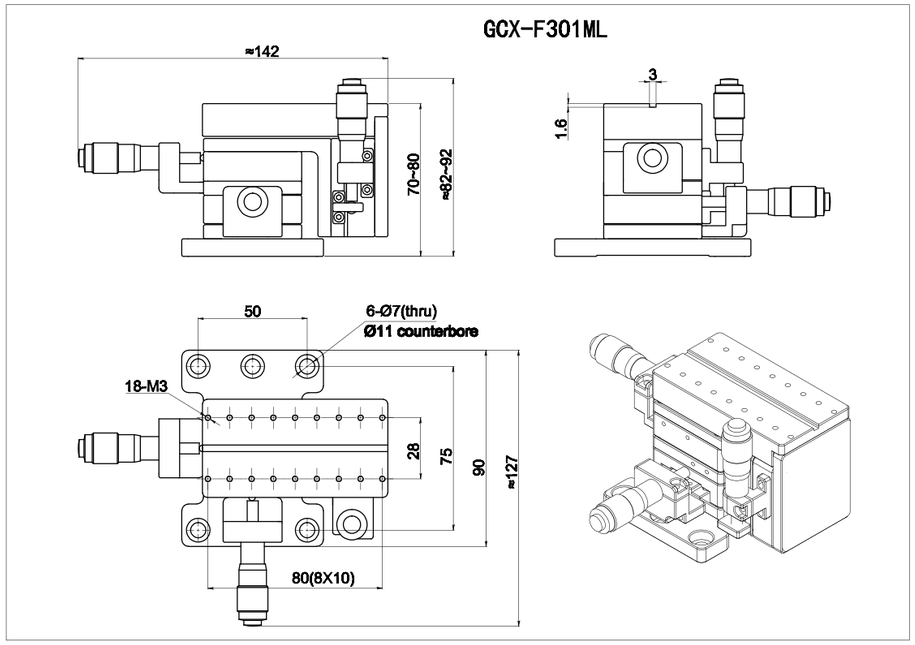
All units in mm unless otherwise specified

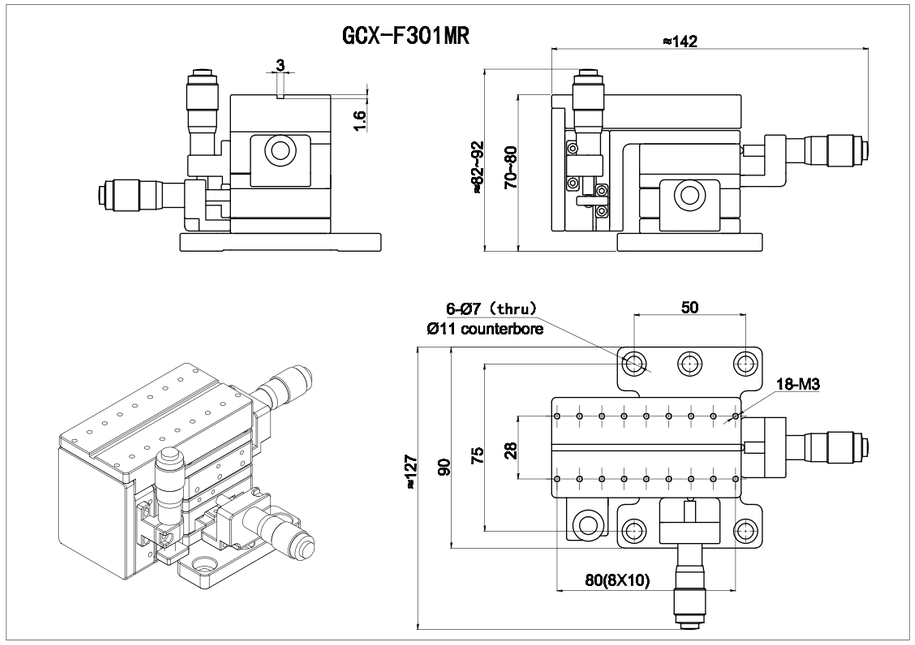
GCX-F301ML(R) Precision Fiber Optic Alignment Stages

Part No.	GCX-F301ML	GCX-F301MR
X Travel Range	±6.5mm	±6.5mm
Y Travel Range	±6.5mm	±6.5mm
Z Travel Range	±5mm	±5mm
Movement Accuracy	0.001mm	0.001mm
Pitch	10 arc sec	10 arc sec
Yaw	10 arc sec	10 arc sec

APPLICATION EXAMPLE





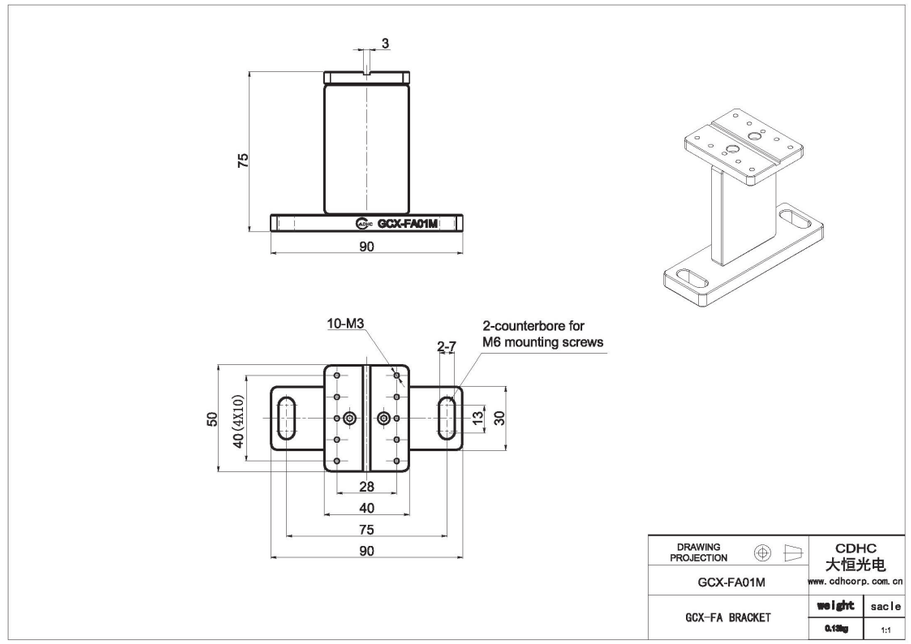


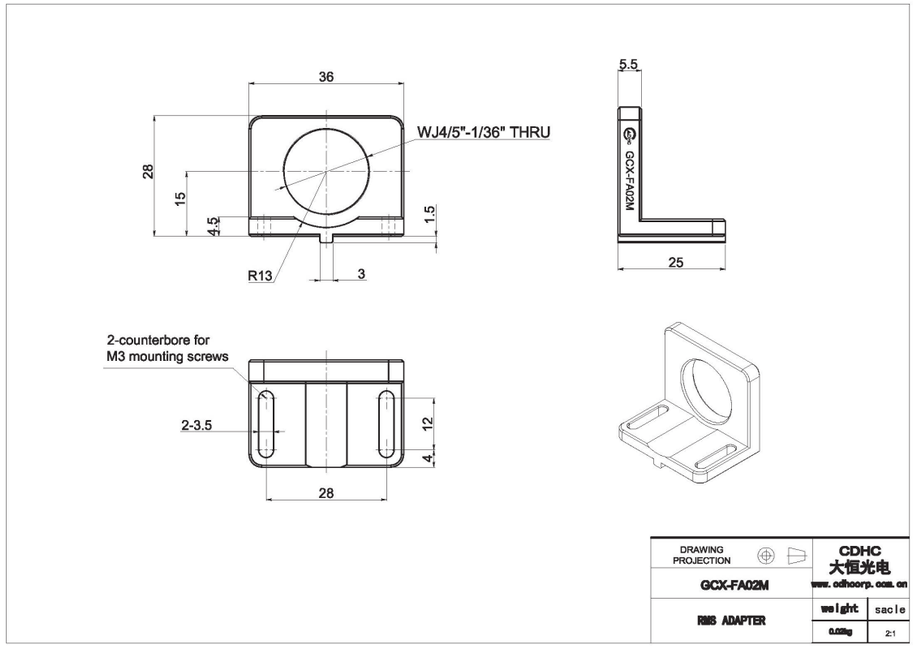
GCX-FA Fiber Alignment

We offer a wide range of accessories specifically designed for Fiber Alignment Stages, including adapter brackets, lens and objective mounts, SM1 thread adapters, FC/PC interface adapters, FC/APC interface adapters, SMA905 interface adapters, bare fiber holders, etc.

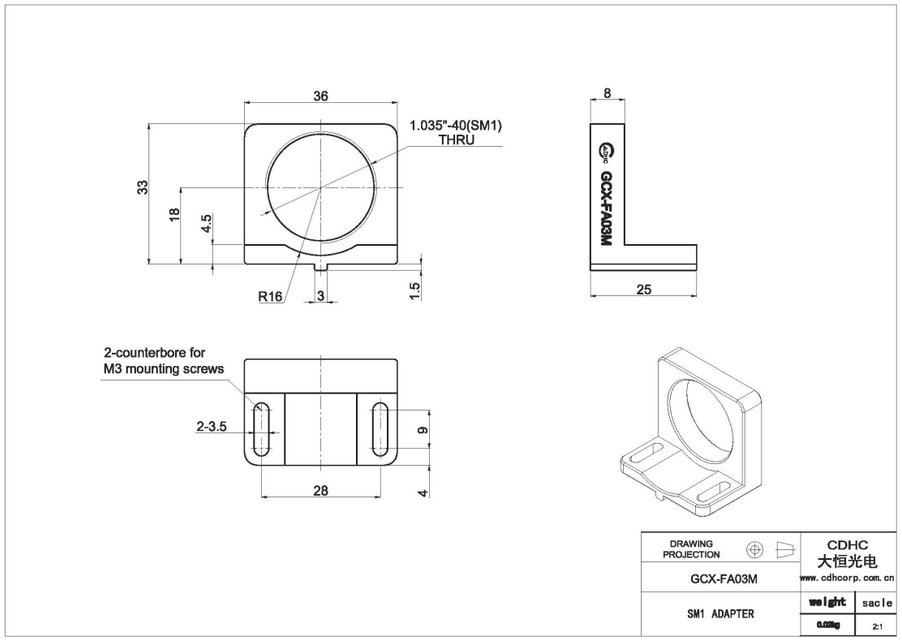
Part No.	Part Name	Interface
GCX-FA01M	Adapter Brackets	--
GCX-FA02M	Lens Mounts	W4/5″ -1/36
GCX-FA03M	SM1Threas Adapters	SM1
GCX-FA04M	FC/PC Interface Adapters	FC/PC
GCX-FA05M	FC/APC Interface Adapters	FC/APC
GCX-FA06M	SMA905 Interface Adapters	SMA905
GCX-FA250M	Fiber Holders	250um

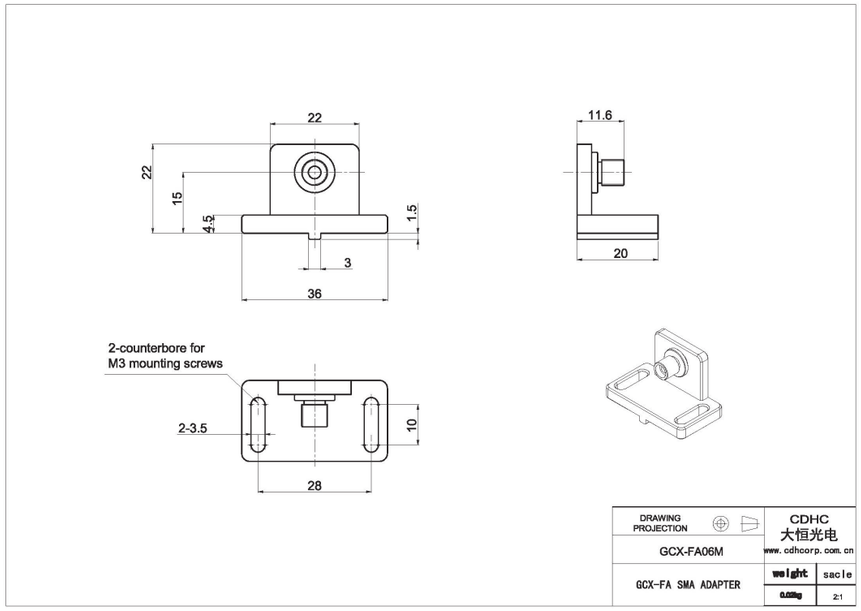
All units in mm unless otherwise specified

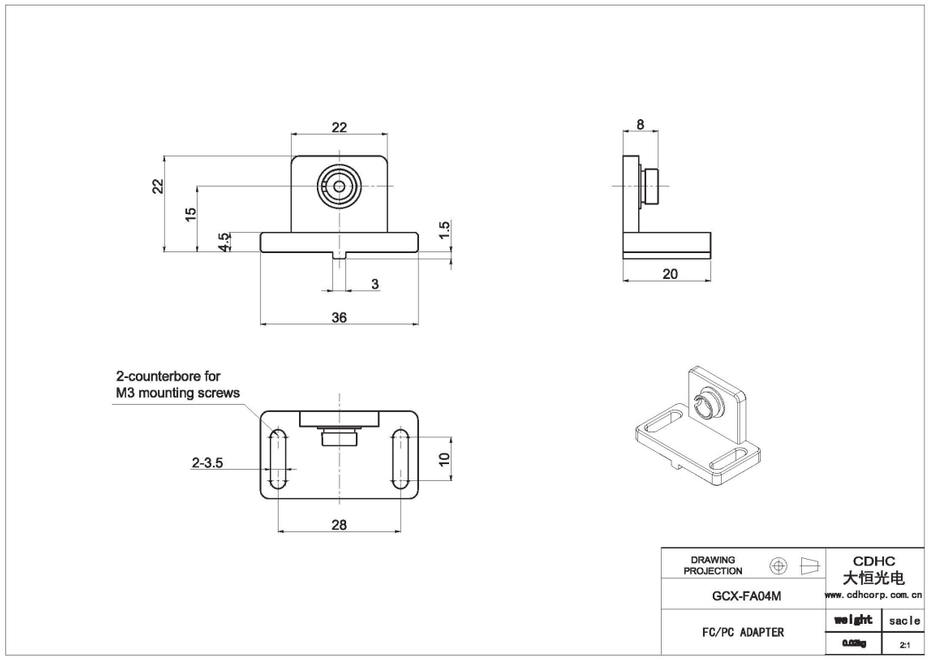


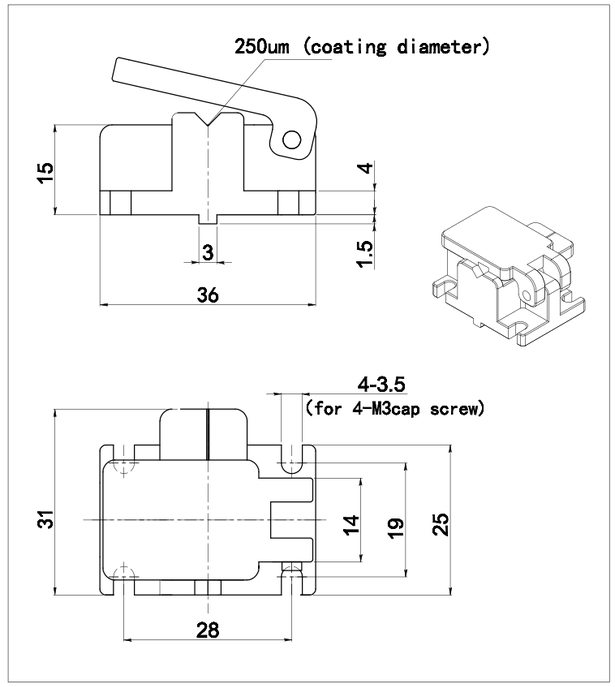


All units in mm unless otherwise specified


36
1.035"-40(SM1)
THRU
33
18
4.5
R16
3
1.5
8
GCX-FA03M
25
2-counterbore for
M3 mounting screws
2-3.5
9
28
4
DRAWING PROJECTION
CDHC
大恒光电
www.cdhcorp.com.cn
GCX-FA03M
SM1 ADAPTER
weight
0.02kg
sacle
2:1


22
22
15
4.5
1.5
3
36
11.6
20
2-counterbore for
M3 mounting screws
2-3.5
10
28
DRAWING PROJECTION
CDHC
大恒光电
www.cdhcorp.com.cn
GCX-FA06M
GCX-FA SMA ADAPTER
weight
0.02kg
sacle
2:1


22
22
15
4.5
1.5
3
36
8
20
2-counterbore for
M3 mounting screws
2-3.5
10
28
DRAWING PROJECTION
CDHC
大恒光电
www.cdhcorp.com.cn
GCX-FA04M
FC/PC ADAPTER
weight
0.03kg
sacle
2:1


250um (coating diameter)
15
4
3
1.5
36
4-3.5
(for 4-M3cap screw)
31
14
19
25
28

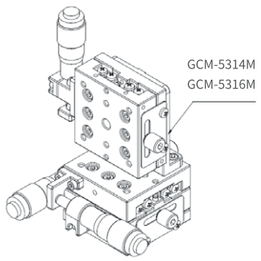
Translation Stages

GCM-TP HIGH PRECISION TRANSLATION STAGE

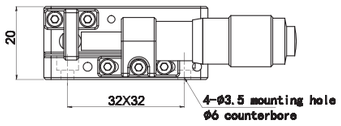
GCM-TP series products are high-precision translation stages of Daheng Optics. The stage is constructed with a full aluminum body and crossedroller steel bearings for precision motion and high-load capacity. The thickness of the stage is 20mm and the travel is 13mm and 25mm. The platform size is 45X45mm and 65X65mm.

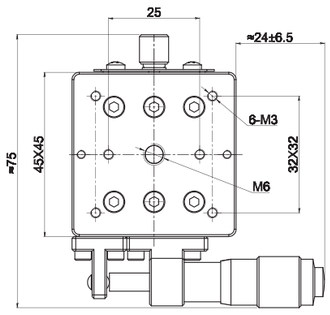
Part No.	GCM-TP13ML	GCM-TP13MR	GCM-TP25ML	GCM-TP25MR
Driving Direction	Side Drive(Left)	Side Drive(Right)	Side Drive(Left)	Side Drive(Right)
Travel(mm)	±6.5		±12.5	
Platform Size (mm)	45X45		65X65	
Thickness(mm)	20		20	
Bearing Type	High Precision Crossed-roller Bearings			
Micrometer Head	Mitutoyo		Mitutoyo	
Resolution(μm)	10		10	
Yaw(")	20		20	
Pitch(")	20		20	
Straightness (μm)	3		3	
Parallelism(μm)	10		10	
Horizontal Load Capacity (kg)	5		7	
Weight (kg)	0.16		0.35	
Material	Aluminum Alloy			

Accessories
GCM-5314M/GCM-5316M



GCM-TP13ML





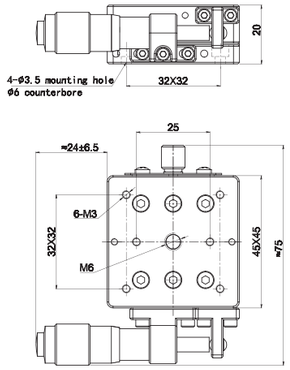
GCM-TP13ML

All units in mm unless otherwise specified

Translation Stages

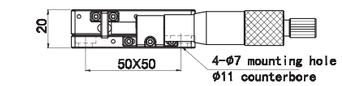
GCM-TP HIGH PRECISION TRANSLATION STAGE

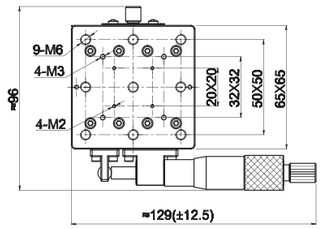
GCM-TP13MR



GCM-TP13MR

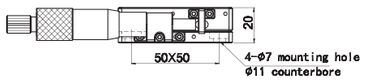
GCM-TP25ML

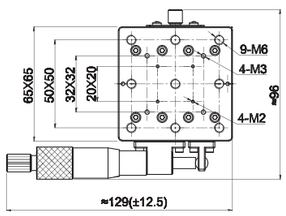




GCM-TP25ML

GCM-TP25MR

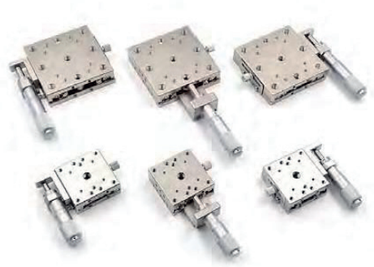




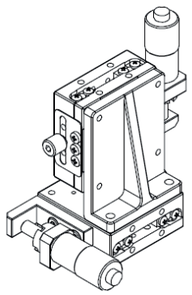
GCM-TP25MR

All units in mm unless otherwise specified

Translation Stages



Accessories
GCM-531401M



GCM-TPS13MC

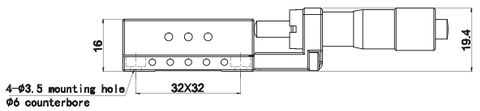
GCM-TPS STAINLESS STEEL TRANSLATION STAGES

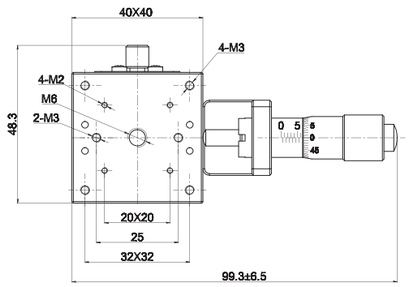
GCM-TPS series products are compact high-precision stainless steel translation stages of Daheng Optics. The thickness is 16mm and the travel is 13mm and 25mm. The platform size is 40X40mm and 65x65mm respectively. They all have the characteristics of high precision, compact size, good rigidity, strong loading capacity and long-term stability, and can be used in high precision adjustment products such as laser equipment.

- ◆ Full stainless steel body for good rigidity and long-term stability
- ◆ Gothic arch ball bearing for high precision and strong load capacity
- ◆ Compact design suitable for small space equipment

GCM-TPS13M 13mm Travel Stainless Steel Translation Stages

Part No.	GCM-TPS13MC	GCM-TPS13ML	GCM-TPS13MR
Driving Direction	Center Drive	Side Drive(Left)	Side Drive(Right)
Travel (mm)	±6.5		
Platform Size (mm)	40X40		
Thickness(mm)	16		
Bearing Type	Gothic arch ball bearing		
Resolution(μm)	10		
Yaw(")	20		
Pitch (")	20		
Straightness(μm)	3		
Horizontal Load Capacity(kg)	10		
Weight (kg)	0.23		
Material	Stainless Steel		





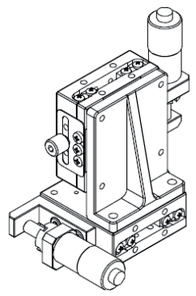
All units in mm unless otherwise specified

Translation Stages

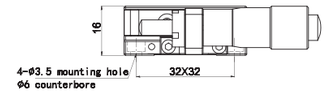
GCM-TPS13ML

GCM-TPS13MR

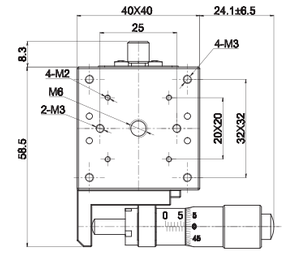
Accessories
GCM-531601M

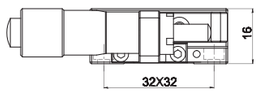


GCM-TPS STAINLESS STEEL TRANSLATION STAGES

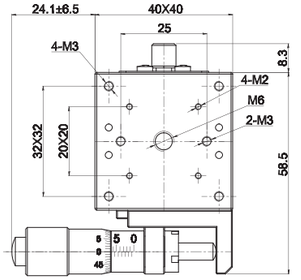


GCM-TPS13ML





GCM-TPS13MR



GCM-TPS25M 25mm Travel Stainless Steel Translation Stages

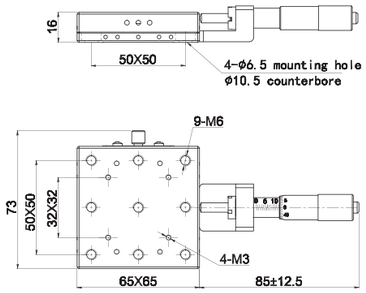
Part No.	GCM-TPS25MC	GCM-TPS25ML	GCM-TPS25MR
Driving Direction	Center Drive	Side Drive(Left)	Side Drive(Right)
Travel (mm)	±12.5		
Platform Size (mm)	65X65		
Thickness(mm)	16		
Bearing Type	Gothic arch ball bearing		
Resolution(μm)	10		
Yaw(")	20		
Pitch (")	20		
Straightness(μm)	3		
Horizontal Load Capacity(kg)	20		
Weight (kg)	0.5		
Material	Stainless Steel		

All units in mm unless otherwise specified

Translation Stages

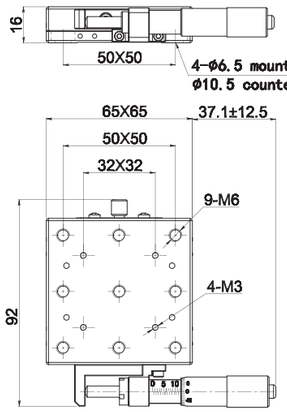
GCM-TPS STAINLESS STEEL TRANSLATION STAGES

GCM-TPS25MC



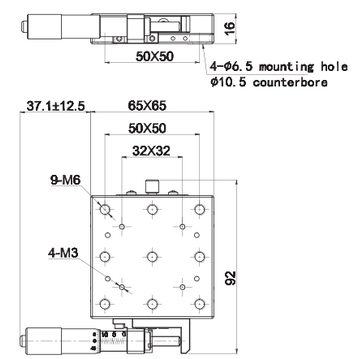
GCM-TPS25MC

GCM-TPS25ML



GCM-TPS25ML

GCM-TPS25MR



GCM-TPS25MR

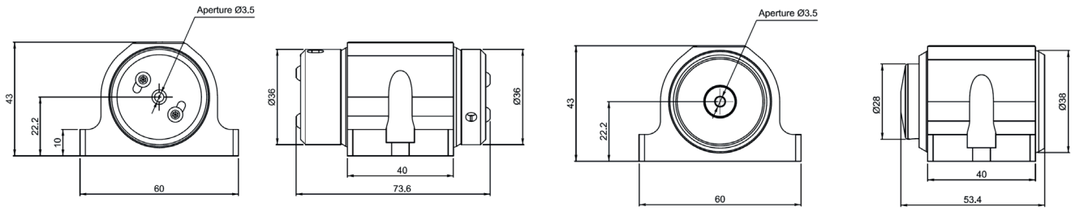
All units in mm unless otherwise specified

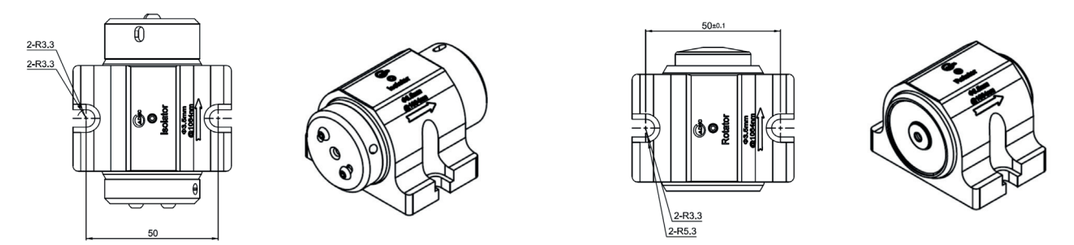
DHF & DHI Rotator & Isolator Faraday

Daheng Optics supplies DHI and DHF series products which are always good solution for special demands of free space Rotators and Isolators in different wavelengths and in different apertures. All products have been designed to give good performance at their demands of high damage threshold, low absorption, low insertion loss and high isolation.

FEATURES:

· High damage threshold, low absorption and low insertion loss
· Different wavelength: 405nm, 532nm, 561nm, 638nm, 670nm, 730nm,785nm, 800nm, 850nm, 920nm, 980nm, 1030nm, 1040nm, 1053nm, 1064nm
· Different Aperture: 3.5mm, 4mm, 5mm





Isolator

Rotator

All units in mm unless otherwise specified

Isolator							
Part No.	Wavelength (nm)	Aperture (mm)	Rotation	Damage Threshold (@1064nm)	Transmission Rate,	Peak Isolation	Isolated Beam Pointing
DHI-1030-3.5	1030	3.5	45° ±0.5°	10J/cm²@10ns，1J/cm²@8ps	>96%	>33dB	<5 mrad
DHI-1045-3.5	1045	3.5	45° ±0.5°	10J/cm²@10ns，1J/cm²@8ps	>96%	>33dB	<5 mrad
DHI-1053-3.5	1053	3.5	45° ±0.5°	10J/cm²@10ns，1J/cm²@8ps	>96%	>33dB	<5 mrad
DHI-1064-3.5	1064	3.5	45° ±0.5°	10J/cm²@10ns，1J/cm²@8ps	>96%	>33dB	<5 mrad
DHI-405-4.0	405	4.0	45° ±0.5°	3J/cm²@10ns	>90%	>30dB	<5 mrad
DHI-532-4.0	532	4.0	45° ±0.5°	3J/cm²@10ns	>90%	>30dB	<5 mrad
DHI-561-4.0	561	4.0	45° ±0.5°	3J/cm²@10ns	>90%	>30dB	<5 mrad
DHI-638-4.0	638	4.0	45° ±0.5°	3J/cm²@10ns	>90%	>30dB	<5 mrad
DHI-670-4.0	670	4.0	45° ±0.5°	3J/cm²@10ns	>90%	>30dB	<5 mrad
DHI-730-4.0	730	4.0	45° ±0.5°	3J/cm²@10ns	>90%	>30dB	<5 mrad
DHI-785-4.0	785	4.0	45° ±0.5°	3J/cm²@10ns	>90%	>30dB	<5 mrad
DHI-800-4.0	800	4.0	45° ±0.5°	3J/cm²@10ns	>90%	>30dB	<5 mrad
DHI-850-4.0	850	4.0	45° ±0.5°	3J/cm²@10ns	>90%	>30dB	<5 mrad
DHI-920-4.0	920	4.0	45° ±0.5°	3J/cm²@10ns	>90%	>30dB	<5 mrad
DHI-980-4.0	980	4.0	45° ±0.5°	3J/cm²@10ns	>90%	>30dB	<5 mrad
DHI-810BB-5.0	720-950nm	5.0	45° ±0.5°	3.4J/cm²@10ns	>93%	>34dB	<5 mrad

Rotator						
Part No.	Wavelength (nm)	Aperture (mm)	Rotation	Damage Threshold (@1064nm)	Transmission Rate	Beam pointing
DHF-1030-3.5	1030	3.5	45° ±0.5°	10J/cm²@10ns，1J/cm²@8ps	>98%	<5 mrad
DHF-1045-3.5	1045	3.5	45° ±0.5°	10J/cm²@10ns，1J/cm²@8ps	>98%	<5 mrad
DHF-1053-3.5	1053	3.5	45° ±0.5°	10J/cm²@10ns，1J/cm²@8ps	>98%	<5 mrad
DHF-1064-3.5	1064	3.5	45° ±0.5°	10J/cm²@10ns，1J/cm²@8ps	>98%	<5 mrad
DHF-405-4.0	405	4.0	45° ±0.5°	3J/cm²@10ns	>98%	<5 mrad
DHF-532-4.0	532	4.0	45° ±0.5°	3J/cm²@10ns	>98%	<5 mrad
DHF-561-4.0	561	4.0	45° ±0.5°	3J/cm²@10ns	>98%	<5 mrad
DHF-638-4.0	638	4.0	45° ±0.5°	3J/cm²@10ns	>98%	<5 mrad
DHF-670-4.0	670	4.0	45° ±0.5°	3J/cm²@10ns	>98%	<5 mrad
DHF-730-4.0	730	4.0	45° ±0.5°	3J/cm²@10ns	>98%	<5 mrad
DHF-785-4.0	785	4.0	45° ±0.5°	3J/cm²@10ns	>98%	<5 mrad
DHF-800-4.0	800	4.0	45° ±0.5°	3J/cm²@10ns	>98%	<5 mrad
DHF-850-4.0	850	4.0	45° ±0.5°	3J/cm²@10ns	>98%	<5 mrad
DHF-920-4.0	920	4.0	45° ±0.5°	3J/cm²@10ns	>98%	<5 mrad
DHF-980-4.0	980	4.0	45° ±0.5°	3J/cm²@10ns	>98%	<5 mrad

FLS-1064P-50 Picosecond Fiber Laser

The FLS series laser systems are turnkey all-PM-fiber based picosecond and femtosecond mode locked fiber lasers. FLS-1064P-50 is suited for seeding industrial laser systems, which is optimal designed for nearly transform limited polarized output with narrow bandwidth. The optics and electronics are just in one box, which makes it robust, reliable and compact.

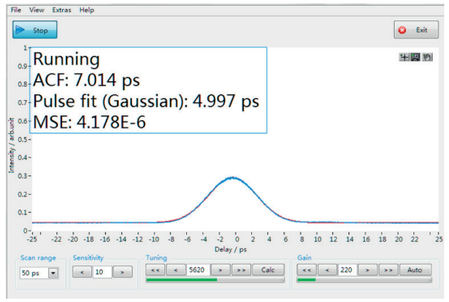
APPLICATION FIELD：

·Solid state/fiber amplifier seed source
·Laser ranging
·Supercontinuum generation
·R&D

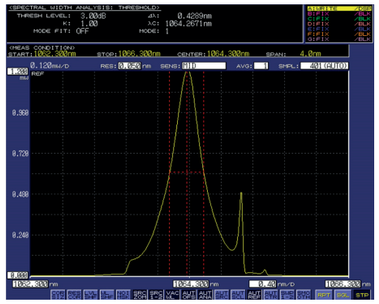
SPECIFICATIONS：

Center wavelength	nm	1064.3±0.5
Spectral width	nm	＜0.5
Pulse duration	ps	＜15
Repetition rate	MHz	20±1
Average output power	mW	＞50
Linear polarization	dB	＞20dB
Power stability	%RMS	＜1
Beam shape		TEM00 M2＜1.1
Output coupling		PM980-xp（＞20cm）
Fiber connector		Narrow key FC/APC
Trigger signal (SMA connector)	V	＞1@50 Ohm
Power supply	V	12
Operating conditions	℃	15~35, humidity-not condensing
Weight laser head	kg	＜2
Dimensions laser head	mm	132×200×41

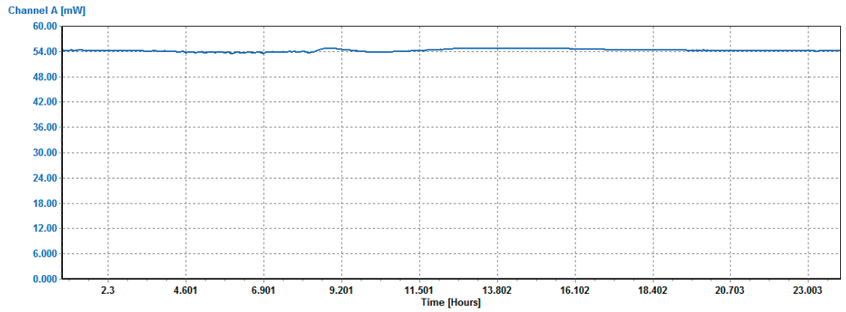
PERFORMANCE:



Typical autocorrelation curve

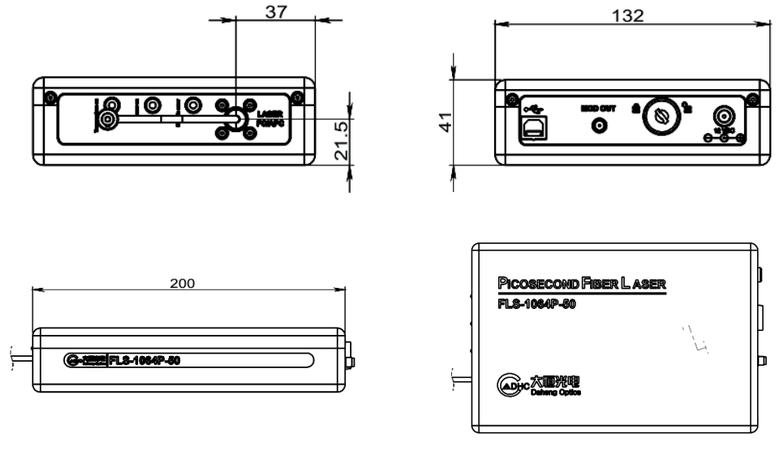


Typical spectrum



24 hours power stability at 25°C

DRAWING:



FLS-1560F-FD Femtosecond Fiber Laser

The FLS series laser systems are turnkey all-PM-fiber based picosecond and femtosecond mode locked fiber lasers. FLS-1560F-FD is cost-effective source for fiber terahertz generation, which is optimal designed for ~6m fiber dilivery with sub 100fs polarized output. The optics and electronics are just in one box, which makes it robust, reliable and compact.

KEY FEATURES:

- 6 m single-mode fiber (PM1550) output
- FC/APC connectors at laser head
- Dispersion pre-compensated in laser head
- Sub 100 fs output pulse

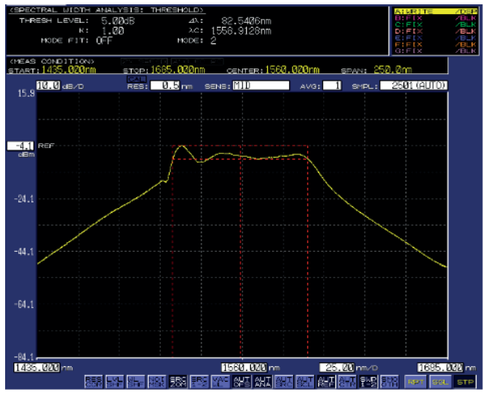
APPLICATION FIELD:

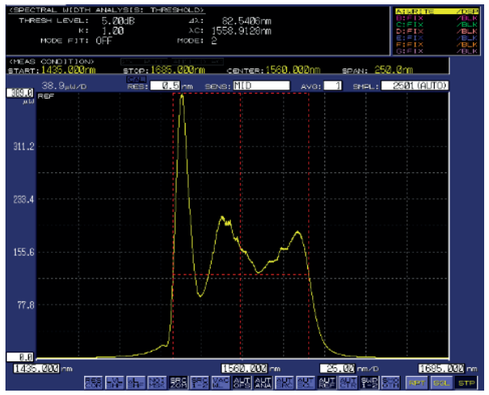
- Fiber terahertz time domain spectroscopy
- Two-photon microscopy
- Precision measurement0
- R&D

SPECIFICATIONS:

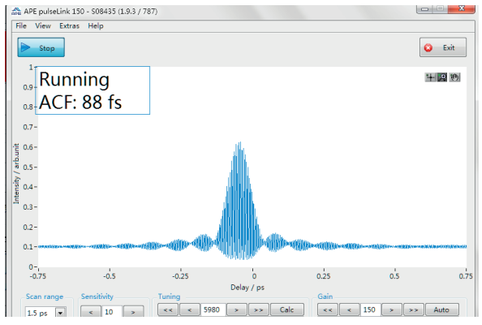
Center wavelength	nm	1560±10
Pulse duration	fs	＜100（typ. 65）
Repetition rate	MHz	80±1
Average output power	mW	＞80（typ. 100）
Linear polarization	dB	＞14dB
Power stability	%RMS	＜1
Beam shape		TEM00 M2＜1.1
Output coupling		PM1550（typ. 6.5m）
Fiber connector		Narrow key FC/APC
Trigger signal (SMA connector)	V	＞1@50 Ohm
Power supply	V	12
Operating conditions	°C	15~35, humidity-not condensing
Weight laser head	kg	＜3
Dimensions laser head	mm	144x218x56

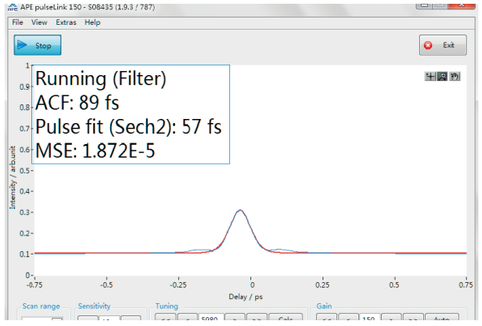
TYPICAL SPECTRUM：

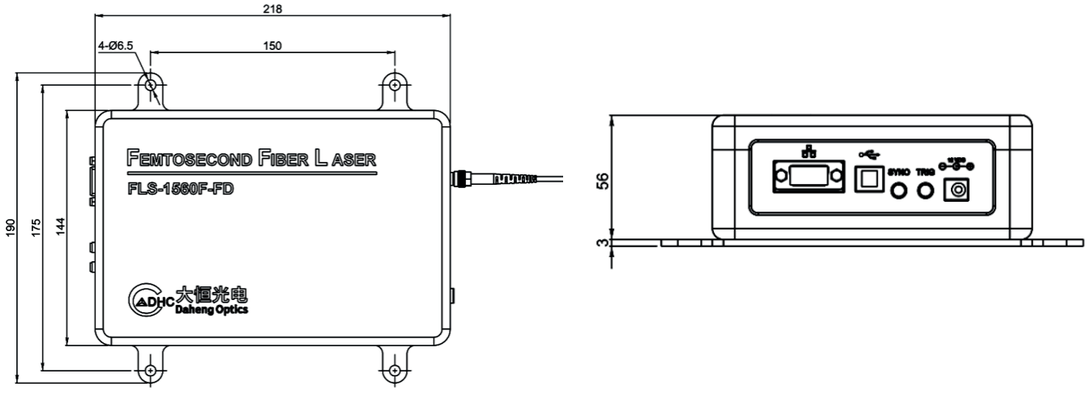




TYPICAL AUTOCORRELATION CURVE：







Daheng Optics provides full-service optical design, engineering, manufacturing and assembly to a varied client-base worldwide for over 30 years. We use leading professional optical design software such as Zemax, Thin Film Calc, and Solid Works, to provide customers with lens manufacturing, optical coating and complete optical design consulting services.

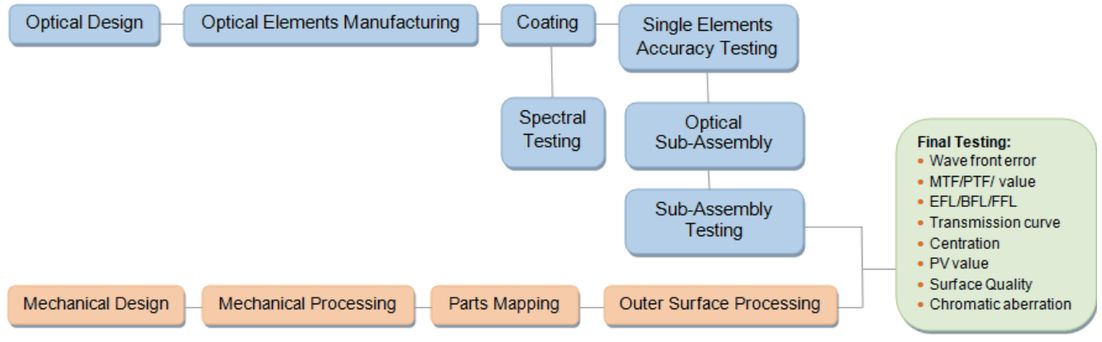
Our optical system solutions can be applied to many different fields such as Machine Vision, Laser Material Processing, Defense and Research.

We can provide DFM (design for manufacture) input on optical designs from the very beginning stages to volume production, in order to provide our customers with the ultimate market advantage.

ADVANTAGES

- Competitive Cost and Top Quality Products
- Rapid prototyping & volume production
- Solid manufacturing experience and excellent process control

PROTOTYPING FLOW



Effective Prototyping: We are comfortable with low volume prototyping before going into mass production. Our adjustment on prototyping is also very effective.

Process Control: Every single processing is accompanied with strict inspection & QA policies to ensure that each part will fully meet your expectations. All SO processing follows ISO: 9001 standards.

Full Inspection: A final inspection report on all specs per customer’ s demand will be provided along with part shipment.