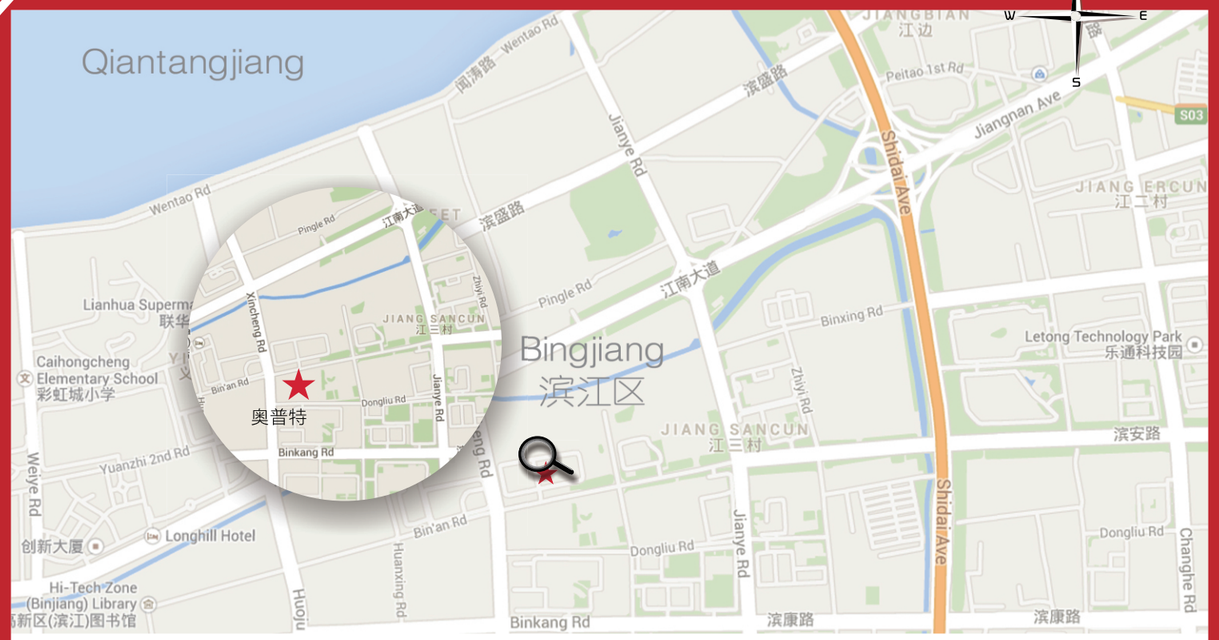

奥普特
Toplens

杭州奥普特光学有限公司
Toplens(Hangzhou), Inc.

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眼镜光学样本
For Ophthalmic

Toplens

杭州奥普特光学有限公司

自从1998年公司创立以来，历经苏州顶精光学公司，杭州顶尖光学公司的发展，Toplens已经成为专业、精密和可靠的高质量光学加工设备和检测仪器综合供应商的代名词。从2000年同德国OptoTech的合作，2005年同比利时A&R公司的合作到2011年同Opteg公司的合作，极大地丰富了我们可为中国客户提供的产品:从CNC数控的先进精密光学设备，包括球面、平面、非球面和自由曲面的加工设备和检测仪器，到包括镜片生产、检测和包装的眼镜光学设备。

开始是有一个想法，而把思想转化为实实在在的设备需要靠 "know-how"。在与用户的交流中，我们知道什么是市场需要的，什么是我们可以做而别人又做不到的。出身精密光学仪器的团队能把客户的每一个需求实实在在地转化为产品。从2002年的第一张图纸到今天的精密测角仪、激光标刻和油印系统、数控装配割边机、车房检测仪器和自由曲面设计软件五大系列产品，感谢公司优秀的技术团队把杭州奥普特光学公司发展成为同时在精密光学和眼镜光学领域都享有声誉的、最具活力的公司之一。

公司立足于为客户进行个性化解决的产品，“用精密光学的技术，打造独特光学设备”的宗旨是公司能立足于市场，满足于客户需求的根本。每年的大投入研发使公司的产品不断涌现，在彻底了解光学行业特点和每个客户特殊要求的基础上，走在技术革新的前沿，不断引导光学加工和检测的发展方向，Toplens公司有能力研发能为行业带来新思想、新理念的新型光学检测设备和加工机械。

最好的产品离不开良好的服务。如果说卖给客户第一台设备靠的是产品样本的性能指标，那么卖给客户第二台设备要靠良好的服务。其实最好的产品服务不是跑客户有多勤，而是要让客户想不起来需要你的服务。这一方面需要在设计和生产设备的过程中选用上等质量的原材料和元器件供应商，在产品上市前进行长时间的使用测试。另一方面需要公司有一支负责任的技术队伍对客户如何正确使用产品进行详细的技术培训。在这两方面要做得出色，需要公司全体员工达成共识，目标一致。而Toplens就是这样要求自己的。

Toplens
公司简介

结合比利时A&R公司、德国OptoTech和德国Opteg公司
我们可以为你提供以下产品和服务：

- 数控光学冷加工设备，口径从1mm到2000mm，包括球面，非球面和自由曲面
- 光学检测设备，包括干涉仪和测角仪
- 眼镜光学自由曲面加工和检测设备
- 眼镜光学全自动包装检测设备
- 激光标刻和油印系统
- 自由曲面设计软件
- 数控装配割边机
- 离子束抛光机
- 光学镀膜机
- 光学辅料

更多信息请访问www.toptics.com 或www.toplens.cn

Since the company was founded in 1998 by Dr. William Meng, after growing in Suzhou and Toptics (Hangzhou). Inc., Toplens has become synonymous with professional, sophisticated and reliable suppliers of high quality optical processing machines and testing instruments. In 2000, Toptics established business with its first partner, OptoTech Germany GmbH, and with second partner, Belgium A & R company, in 2005, and not until 2011 did it have Opteg GmbH Germany as the third cooperator, which greatly enriched the products the company can provide for customers: from optical CNC precision machines, including spherical, plano, aspheric machines; surfacing, control and measuring freeform surfaces, to laser engraving and inking equipment that involves lens surfacing, control and packaging.

In the beginning, there was just a general idea, and “know-how” was needed to put ideas into real devices. During communication with users, we learned what the market needs, and what we can do. Thanks to precision optical engineering developing team, each customer's real needs can be converted into products. From the first drawings in 2002 to today's precision goniometer, laser engraving and inking systems, CNC crib cutting machine center, metrology instruments for RX Labs and freeform design software in total five series of products, the company, with its excellent team, has developed into one of the most reputable and dynamic companies in fields of both optical precision optics and ophthalmic industries.

Our company is focused on product customization. The purpose “to create unique equipment with precision optical technology” is what our company has been established on and what we follow to meet customer needs. Through large annual investment in R&D, our products continue to emerge. With a thorough understanding of the characteristics of the optical industry and the special requirements of each client, the company has come to the forefront of technological innovation. Constantly guiding the development of optical processing and testing, Toplens has the ability to produce optical metrology equipment that will bring new ideas and new concepts to optical processing industry.

The best product is inseparable from high quality service. If the first sale of device to customers relies on specification in the product brochure, the second sale always depends on the service provided. In fact, the best products and services to customers is not to visit them frequently, but to let customers unaware of the need for your services. This requires finest quality of raw materials and components suppliers in the design and production of the device, and adequate tests before the product is brought to the market. On the other hand, it is necessary to have a responsible technical team liable for customer training on correct use of the products in details. In order to stand out in these two areas, it is important for all staffs in the company to reach a consensus and unity of purpose. Thanks to our team, Toplens has been outstanding following such directions.

Toplens
Company Profile

Combination of A & R companies in Belgium, German OptoTech and Opteg GmbH and our own, we can offer you the following products:

- CNC precision optical machines from f1mm to f2000mm, including spherical, aspheric and freeform surfaces
- Optical measurement equipment, including interferometer and goniometer
- Ophthalmic freeform surface machining and testing equipment
- Ophthalmic automatic control and packaging equipment
- Laser engraving systems and Inking system
- Freeform surface design software
- CNC lens cribber machine
- Ion beam figuring machine
- Optical coating machine

For more information, please visit www.toptics.com or www.toplens.cn

目录

Content

为了在现片、车房树脂镜片、渐进多焦点和玻璃模具上留下不可擦写的隐形印记，都需要在镜片表面用机械或激光的方式进行隐形标志的刻写。机械雕刻由于雕刻效果差和速度慢已经激光打标替代。采用激光打标目前是大家的不二之选。

激光打标主要分热打标，冷打标和激光等离子体刻蚀三种。热激光和冷激光打标都要求镜片材料或膜层能吸收激光能量，激光等离子体刻蚀则不需要材料对^{2}激光吸收，但是要求有10GW/cm 的激光功率密度。热激光通过激光热效应烧灼镜片材料使之汽化离开表面而形成不可擦写的标记；冷激光是利用激光高能光子打断材料的化学键使材料分子脱落表面而形成标记;而激光等离子体则通过等离子体刻蚀剥离镜片材料的方式达到刻写的目的。从打标效果来讲，三种方式打标效果依次提升，但伴随效果的提升，造价也是逐步非线性上涨。

To leave an inerasable and invisible mark on the surface of stock lens, RX and progressive lens and glass molds, lens surface is normally marked mechanically or by laser. Nobody in the industry likes mechanical engraving any more due to its low efficiency and bad quality, laser engraving is now the best choice.

There are three main approaches for laser engraving: hot engraving, cold engraving and laser plasma etching. Both hot and cold laser engraving require lens material or coatings to absorb the laser energy, while laser plasma etching^{2} does not. However, it does require 10GW/cm of laser power density. Hot laser burns lens surface by thermal effect so that the layer of material is vaporized and escapes from the surface to form an inerasable mark. Cold laser utilizes high energy photons to break off bond within the material and make material molecules escape from the surface to form a mark. In terms of engraving quality, laser plasma etching is the most effective with hot engraving as the least, but the better the quality is, the higher the cost gets.

性能逐步增加 Performance

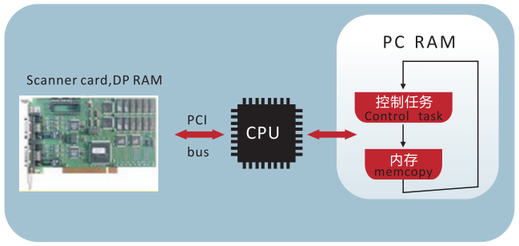
		CO_2	355nm	193nm excimer	266nm	266nm plasma
非加膜树脂镜片	Non-coated resin lens	***	*	****	*****	*****
加膜的树脂镜片	Coated resin Lens	*	**	****	*****	*****
玻璃模具或镜片	Mineral lens or mold	*	*	****	*****	*****
现片激光防伪	Stock lens	*	*	***	****	*****
生产效率(面/h)	Capacity (surf/hr)	600	500	120	500	500
维护间隔	Maintenance cycle	5years	3Years	1 Year	3 Years	3 Years

价格逐步增加 Cost price

目前市面上大多数的激光打标机，由于技术的限制，通常采用基于PCI卡或通过USB控制激光或主轴的运动完成激光的打标，由于Windows是一个非实时的系统，USB则是消费 民用行业的串口协议，两者都无法满足7/24、无差错的工业级激光打标的应用。Toplens一直专注于专业高精度激光打标的技术引领，从2013年开始，首先应用EtherCAT总线协议，创造性地为业界提供了工业总线标准的激光打标解决方案，做到无数据误差的打标。

Most of the engraving machines currently on the market control laser beam or move axis via PCI card or USB. Because Windows OS is a non-real-time operating system, and USB is the serial protocol for consumer electronic, both of them are unable to meet the 7/24 hour, fault-free requirement of industrial laser engraving applications. Toplens has concentrated on its leading role in specialized high-precision laser engraving technology, being the first to apply EtherCAT BUS protocol in 2013 and creatively providing laser engraving solutions to achieve engraving with zero error.

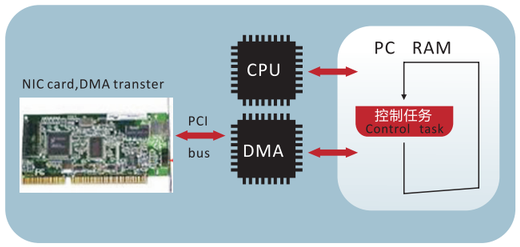
现场总线卡实现的PC控制
PC Control with Fieldbus cards



现场总线卡:高达30%的CPU时间用于数据备用

Fieldbus Cards: up to 30% of CPU time for data copying

EtherCAT实现PC控制
PC Control with EtherCAT



EtherCAT:NIC是PCI总线主控设备数据由DMA提供，直接传送到RAM：解放CPU更佳性能

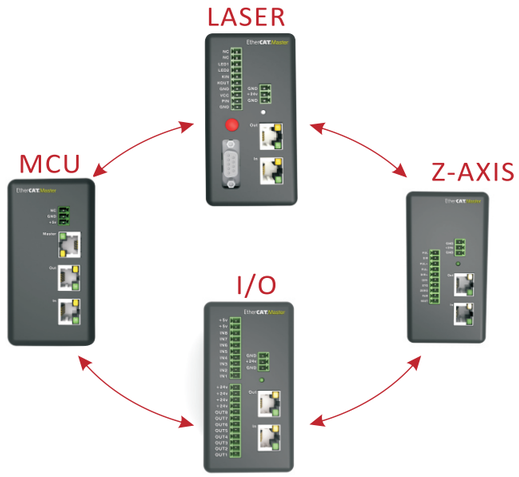
EtherCAT:
MAC is PCI Bus master, data is provided by DMA directly to PC RAM: CPU relieved more performance

EtherCAT Motion Control Unit

Toplens的运动控制/激光单元是基于EtherCAT工业以太总线协议，分为MCU主模块、激光和振镜控制模块、Z-C轴控制模块、IO模块。这套系统不仅可以服务于打标机,更可以单独提供给其他运动控制或数控系统使用

Toplens motion/laser control unit is based on the EtherCAT Industrial Ethernet bus protocol, and consists of MCU main module, laser and galvanometer control module, Z-C axis control module, and IO module. This system can serve not only the engraving machine, but also other motion control systems or CNC alone.

EtherCAT运动控制单元

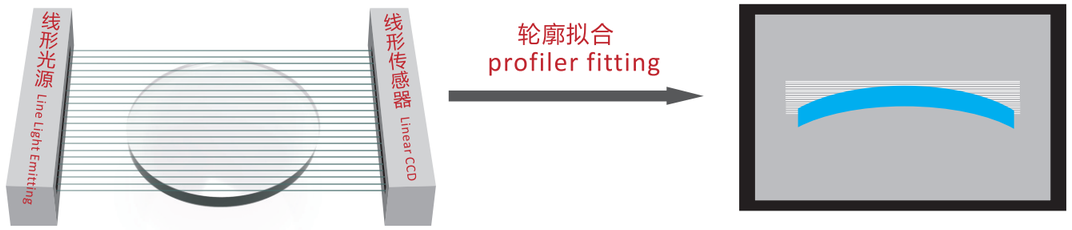


	MCU 主模块 MCU main modul	IO模块 IO modules	激光和振镜控制模块 laser and galvanometer control module	Z-C 轴控制模块 Z-C axis control modules
产品图				
型号Type	TEMO1-OLM	TESO1-IO	TESO1-PWM	TESO1-P/D

LSP Unit单元

常规的镜片轮廓或基弯仪通常都是接触式的，不小心操作时容易划伤软质镜片的表面，造成次品。Toplens将非球面刀口轮廓仪的检测方法经过革新，创造性地用于非接触面形测量。其原理是利用线光源上下移动，镜片从挡光到不挡光在望远镜像面上形成一系列的切面影像，再经过计算机图像重构后得到镜片的面轮廓或基弯，经过标定后的面轮廓测量精度为0.01mm。LSP单元的运用，使得现片的激光防伪打标成为可能。因为不管是193nm的准分子气体激光器还是263nm/266nm的全固体超快激光，一般聚焦f-θ透镜的焦深<2mm，而现片又没有现成的基弯数据。如果没有LSP在线测量系统，要精确地在加膜的镜片上既不破坏膜层又能进行激光防伪的光栅打标是不可能的。

General profiler or torometer usually involves contact, thus, it is easy to scratch the surface if operation on a soft lens is not careful enough, resulting in defective products. Toplens innovates the profiler detection method through aspheric edge detection for non-contact measurement of surface profile in a creative way. Its principle is to use collimated parallel light to project on linear CCD through or through not the lens, move lens up and down to have a series of slice images on telescope image plane, and then reconstruct the surface contours of the lenses with computer's aid in calculation, which eventually obtains a measurement accuracy of 0.01mm after calibration of surface profile. This application of LSP has made it possible to achieve laser grating engraving. Because no matter whether it is 193nm excimer laser or all-solid-263/266nm ultrafast laser, focal depth of f-theta lens generally is less than 2mm, and in the meantime stock lens has no base curve available. If Lens Scan Profiler wasn't introduced, it would be impossible to accurately make laser grating engraving on coated lenses without any damage to film.



独特的非接触式透镜轮廓自动探测系统LSP单元

Unique Non-Contact Linear Scan Profiler

TLE 80 –CO2

FEATURES

技术特性

用于树脂渐进多焦点和车房镜片的打标	Design for Freeform and RX lens engraving
打标周期＜6秒/片	Cycle time: < 6 seconds per mark
能够与OptoCalc,VCA以及其他设计兼容	Compatible with OptoCalc, VCA or other Design format
X/Y/Z三轴设计，激光随镜片表面面形自动聚焦	X/Y/Z 3-Axis, possible automatic laser tracing on lens surface
能够通过输入基弯和厚度打标现片	Engraving stock lens with parameter inputs
能够同时标刻隐形标记和明显可读标记	Engraving invisible and visible mark in one cycle
使用双手安全模块和连锁安全模块	Double-hand button and inter-lock function safety design
激光功率波动补偿，保证连续打标质量	output fluctuation to keep the consistent engraving quality
支持DXF、TIF、JPEG等各种图片格式	corporate logo input in different formats: DXF, TIF, JPEG, and etc
Windows XPE sp3嵌入式操作系统	Embedded Windows XPE sp3
嵌入式12.1寸工业显示触摸屏	12.1 LCD embedded Industrial PC with touch screen
EtherCAT高速工业总线构架	Reliable motion control units based upon EtherCAT protocol
根据CE标准设计	Standard design in compliance with CE regulations
激光安全等级	Safety: laser class IV
软件	Software: SmartEdit 5.0

TECHNICAL DATA

技术参数

打标范围	<ϕ80mm	Working Range
压缩空气	>5bar	Air Pressure
冷却水	20℃, about 5 l/minutes	Cooling Water
输入电源	80-230V AC 50/60Hz	Voltage
功率	1.2kW	Power
外形尺寸	850x600x600mm	Dimensions
重量	about 120 kg	Weight

Options

选件

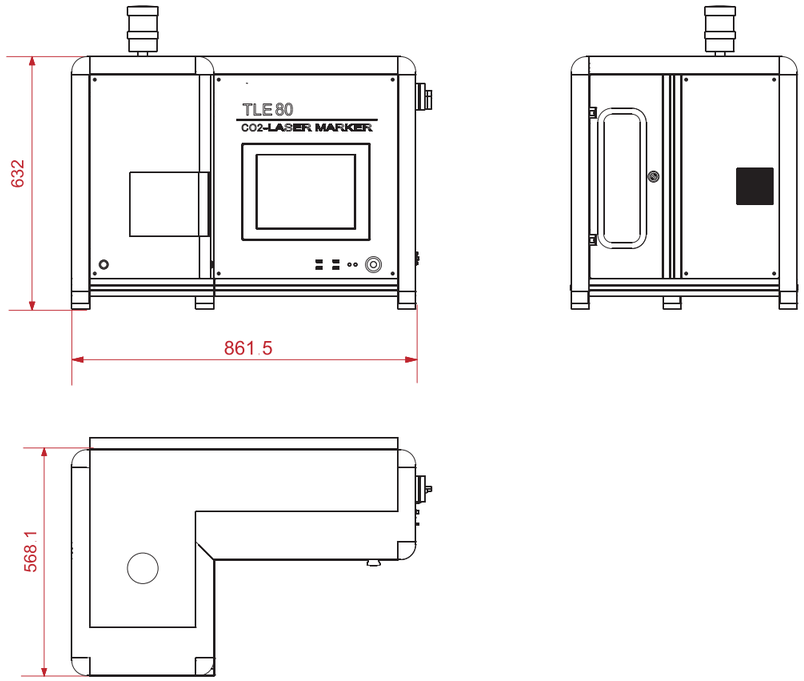
C-轴模块	C-axis
自动装载系统	Auto Loading System

Accessories

附件

品名 Items	规格 Description	部件号P/N
校准平台 Calibration Platform	ϕ80 DIN58766	020-05-12
热敏纸 ThermoPaper	52*70 340	607001000009

三视图



TLE 80 –DUV

FEATURES

技术特性

用于任何镜片和任何模具的打标	Enable to mark for any plastic and mineral glass
打标周期<6秒/片	Cycle time: <6 arc second
能够与OptoCalc,VCA以及其他设计兼容	Compatible with OptoCalc, VCA and others
Z轴采用高速直线电机控制	Z-axis driven by linear and AC servo motor
采用远心光学聚焦系统	Telecentric F-theta focusing system
集成LSP单元，无需读取镜片面型	Integrated LSP unit
也能对任意镜片进行打标	Any lens marking without form data
使用深紫外 266nm全固体超快激光器	DPSS, Pico-Second ultrafast 266nm laser
特别可用于镀膜后的现片防伪打标	Extreme marking for coated stock lens
光栅防伪打标	Possible grating marking
集成条码和电子条码扫描模块	Integrated Linear Scan Profiler for stock lens
EtherCAT高速工业总线构架	Industrial EtherCAT Bus, reliable with easy maintenance
嵌入式12.1寸工业显示触摸屏	12.1 LCD embedded Industrial PC with touch screen
Windows XPE sp3嵌入式操作系统	Embedded Windows XPE sp3
激光安全等级：IV	Safety: laser class IV
根据CE标准设计	Standard design in compliance with CE regulations

TECHNICAL DATA

技术参数

打标范围	<ϕ80mm	Working Range
压缩空气	>5bar	Air Pressure
输入电源	80-230V AC 50/60Hz	Voltage
功率	1.0kW	Power
外形尺寸	850x600x600mm	Dimensions
重量	about 200 kgs	Weight

Options

选件

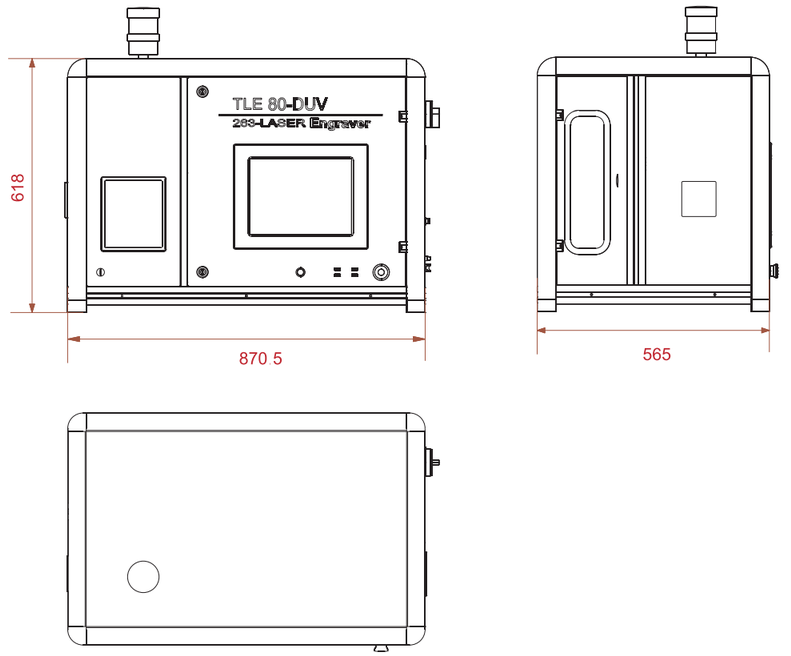
C-轴模块	C-axis
自动装载系统	Auto Loading System

Accessories

附件

品名 Items	规格 Description	部件号P/N
校准平台Calibration Platform	ϕ80 DIN58766	020-05-12
荧光纸 Fluorescent Paper	52*70 340	607003000006
激光防护镜 Laser Shield	ThorLabs	607003000005

三视图



TSL-80

TSL 80 是一款专用于库存片防伪打标的深紫外打标机。具有基弯和轴位测量，直径测量，镜片位置检测和防伪打标四个功能。特别是对任意放置的散光镜片，可自动根据轴位方向在确定的位置打标。

TSL80 is designed for anti-fake DUV engraving for stock lens with automatic check lens base curve and axis, lens diameter & position and engraving. Axis of Cylinder also can be detected even lens with random position so that engraving in defined area is possible

FEATURES

技术特性

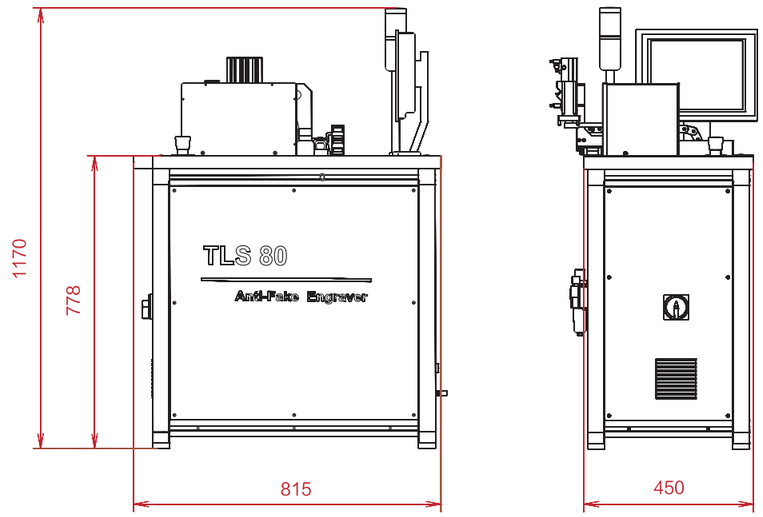
用于现片的防伪打标	Anti-fake Engraving for stock lens
使用深紫外266nm全固体超快激光器	all solid state DUV laser
EtherCAT高速工业总线构架	Reliable EtherCAT industrial BUS
嵌入式12.1寸工业显示触摸屏	12.1"industrial PC
Windows7 嵌入式操作系统	Windows7 OS
激光安全等级：IV	Laser Class IV
根据CE标准设计	Design according to CE mark
自动机械手设计	Automatic loading and unloading design

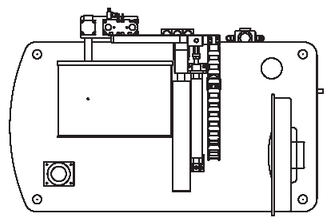
TECHNICAL DATA

技术参数

非接触式直径测量精度	0.05mm	Non Contact Position check
基弯和轴位测量精度	0.01D	Base and axis check accuracy
打标时间	<5秒/片	Cycle time
打标范围	60mm x 60mm	Working area

三视图



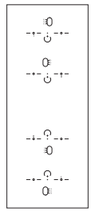


车房镜片中，为了让视光学从业人员容易阅读镜片上的隐形标需要在镜片上印刷防水而又不伤镜片的明标，俗称“黄标”，目前行业中通常采用的是移印或数码喷印的办法。

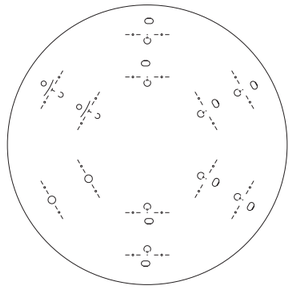
移印是将移印钢板上的图案移印到镜片上,特点是简单，快捷，移印效果好，技术非常成熟，但是有一个最大的缺点，就是不同的图案需要刻蚀不同的移印钢板。数字喷印技术就像打印机一样，不需要做任何钢板，可以随时喷印你需要的图案，但是在相同效果下，喷印通常会比移印慢，另外喷印因为油墨可能会堵塞喷孔，一般需要良好的日常维护。目前数码喷印技术可分为两大类,一类是采用热熔油墨,另一类采用UV紫外固化油墨。两者的区别在于UV油墨的墨点可以控制得非常精细,所以分辨率要比热熔油墨的好,因而喷印效果要优于热熔油墨。

In RX Labs, in order to make it easy for optometry practitioners to read the invisible marks on the lens, RX lens are normally inked with waterproof image, known as the “Yellow Label” image and currently attained by pad printing or inking digital printing in the industry.

Pad printing is to transfer cliche pattern to the lens surface. Its advantage is its simplicity and fast speed in producing excellent quality images, but the big downside is that cliche plates have to be prepared for each image. Just like ink printers, digital ink printing system allows you to print any image without cliche need at anytime, which is why digital inking system is replacing pad printing. But compared to pad printing, digital ink system has longer cycle time and needs to be well maintained, otherwise nozzles will be blocked easily. At present, digital inking printing system can be sorted into two classes according to different ink used. One is solvent ink, the other is UV ink. UV ink point can be easily controlled to get precise and fine results, thus it can produce image with finer and better quality compared to wax solvent ink.



移印钢板
Cliche Plate
100X250mm



转盘式移印板
Ø330mm Disk Cliche
6x2 images

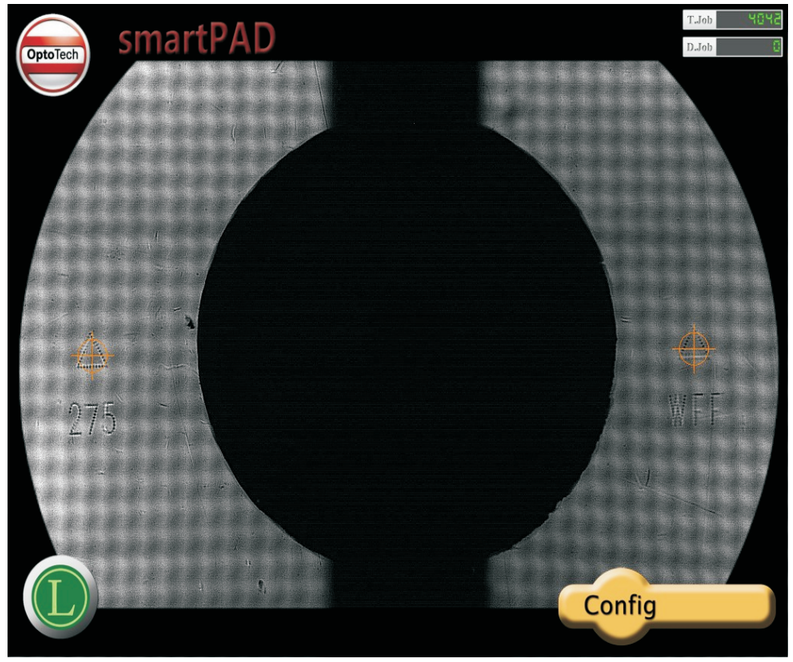
常规的黄标印刷设备都不带隐形标志可读系统，导致激光隐形标志和油印的明标最大偏差2mm以上，这个偏差其实已经超过了通道的宽度。而眼镜验配人员根据这样的油印标装配的眼镜显然是不合格的.但问题出现的根源在车房的黄标印刷环节。

为了解决这一难题,Toplens公司推出了两大类产品,一类是带隐形标可视系统的移印机OPP系列，由于可靠和容易维护，目前已经成为行业的标准。另外一类是能自动识别隐形标志的全自动数码喷印机DIP系列,正引领技术向前发展。

Because conventional pad printing machines don't have visual aid for invisible marks, it is possible to have a maximum deviation of more than 2mm, which has actually exceeded the width of the channel. Fitting lens into frames according to this mispositioned yellow mark by the optical shop officer is obviously not up to par, but such mistake shall be traced back to the yellow mark printing cycle in RX labs.

To obtain an effective solution, Toplens has accomplished two products. One is the pad printing and digital inking system, OPP Pad Printer series with invisible mark visual system, which has become the industry reference due to its reliability and easy maintenance. The other is DIP serial digital inking system that has been leading the development of technology.

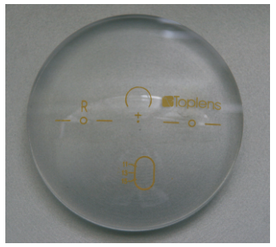
高清晰激光隐形标记可视系统
Invisible Mark Visual Unit



TP-01

TP-01系列采用单工位，R/L眼一体设计。更换图案通过更换移印钢板实现。它适用于150jobs/天以下的小型车房。

TP-01 is single-station design, R/L image on one same cliche. Replacing pattern achieved by replacing the cliche plate. It applies to small labs with 150 jobs/day capacity.



FEATURES

技术特性

生产效率：500片/小时	Capacity: 500pcs/hr
左右镜片的移印图案位于同一块移印板上	R/L lenses by one cliche
用于Rx镜片和半制片移印的紧凑型设计	Compact design for RX and semi-finished lens
清晰的激光隐形标记可视系统辅助对准提高移印质量和效率	Clear visual aid for invisible marks to improve printing quality and efficiency
采用ϕ90mm的油盅	Closed ϕ90mm Ink tank with tungsten lips
R/L移印图案均被油盅覆盖，即使中断移印也不需要清洗移印板再移印	Pattern R and L always covered by Ink-tank, enabling non continuous pad printing
8. 4寸 1024x768液晶触摸式显示屏	8.4” 1024 x768 TFT LCD with touch screen
Windows XPE sp3	Embedded Windows XP sp3
接口：2xUSB, 1xRJ45, 1xCOM	Interface: 2 xUSB, 1x RJ45,1x COM
符合CE标准设计	Standard design in compliance with CE regulations

TECHNICAL DATA

技术参数

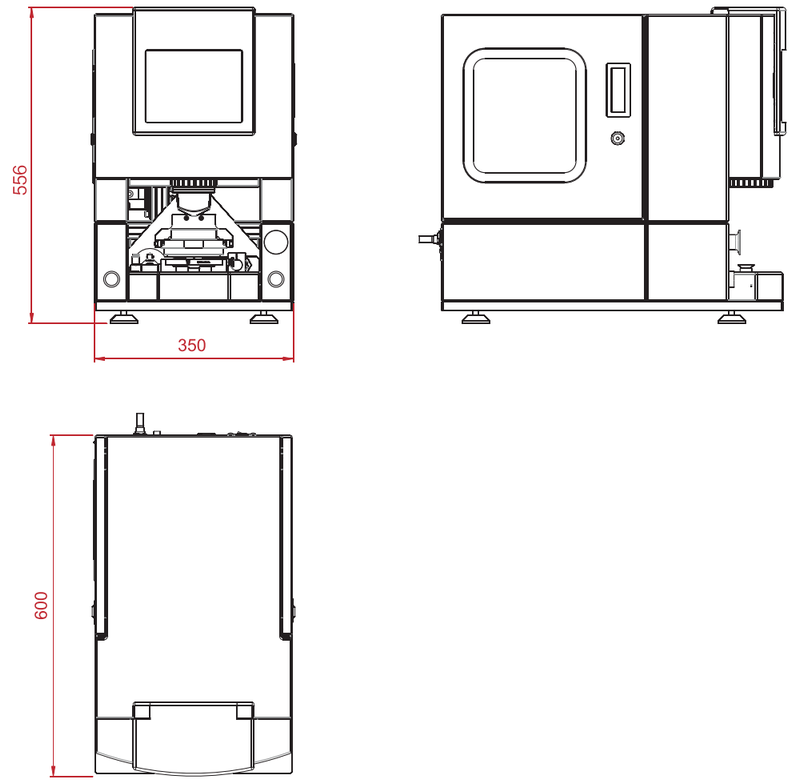
压缩空气	>4bar	Air Pressure
输入电源	80-230V AC 50/60Hz	Voltage
功率	0.3kW	Power
外形尺寸	530x350x600mm	Dimensions
重量	about 60 kg	Weight

Accessories

附件

品名 Items	规格 Description	部件号P/N
油盅 Ink tank	ϕ90 Tungsten Knife	030-002-012
油墨 Ink	Black	030-001-008
	Orange	030-001-007
胶头 Pad	64*42	030-004-003
钢板 Cliche Plate	110x220x10	030-001-002

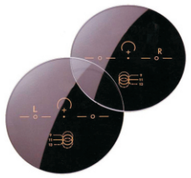
三视图



TP-06

为了迎合150jobs/天以上的中型车房，省去更换移印钢板的麻烦，我们推出了TP-06移印机.它采用大圆盘钢板设计，集成6x2个图案自动切换,左右移印图案均被油盅覆盖,至少可以满足6个设计的移印工作。

In order to meet the need of medium size labs with the above 150jobs/day capacity, eliminating the trouble of replacing the cliche plate, we launched TP-06 pad printer. It has a large round disk cliche plate design, integrated with 6x2 patterns, meeting printing jobs with at least six designs.



FEATURES

技术特性

生产效率: 600片/小时	Capacity: 600pcs/hr
双工位设计	Two-station design
盘式移印板，一盘集成6x2个移印模板，	One disk cliché with 6 x2 design
不再有更换移印板的麻烦	No cliché exchange trouble
用于RX镜片和半制片移印的紧凑型设计	Compact design for RX and Semi-finished lens
清晰的激光隐形标记可视系统辅助对准	Clear visual aid for invisible marks
提高移印质量和效率	to improve printing quality and efficiency
左右移印图案均被油盅覆盖，即使中断移	Pattern R and L full covered by ink-tank,
印也不需要清洗移印板再移印	enabling non continuous pad printing
12.1寸1024x768液晶触摸式显示屏	12.1” 1024x 768 TFT LCD with LED backlight
嵌入式Windows XPE	Embedded Windows XP sp3
接口：4xUSB、1xRJ45、1xCOM	Interface: 4 xUSB, 1x RJ45, 1x COM
可与服务器、镜片检测仪和标签打印机联机	Enable to communicate with RX Lab server
符合CE标准设计	Standard design in compliance with CE regulations

TECHNICAL DATA

技术参数

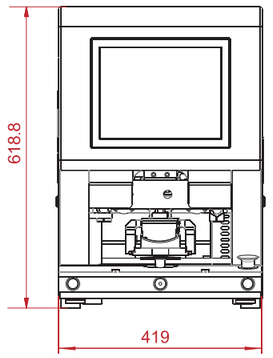
压缩空气	>4bar	Air Pressure
输入电源	80-230V AC 50/60Hz	Voltage
功率	0.5kW	Power
外形尺寸	670x420x660mm	Dimensions
重量	about 100 kg	Weight

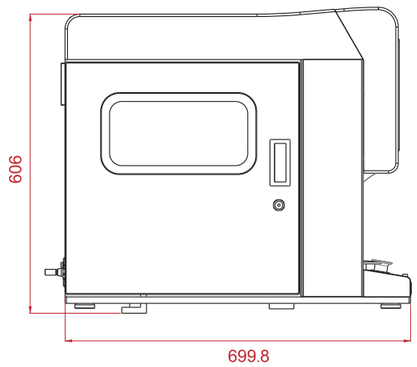
Accessories

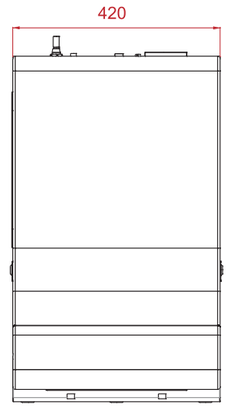
附件

品名 Items	规格 Description	部件号P/N
油盅 Ink tank	Tungsten Knife	030-002-012
油墨 Ink	Black	030-001-008
	Orange	030-001-007
胶头 Pad	64*42	030-004-003
钢板 Cliche Plate	ϕ320x10	030-001-003

三视图







在300jobs/天的大型车房，经常会有客户要定制油印图案，且数量小，品种多。这种情况下采用刻钢板移印的方法，显然无法胜任工作。于是脱胎于喷墨打印机的数码油标喷印机应运而生。

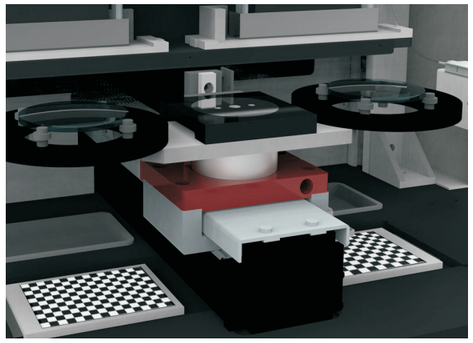
喷印机相比于移印机，可以同打印机一样随意喷印你需要的图案，结合自动探测隐形标，可以自动完成黄标的喷印。并且UV油墨不同于移印机的油性溶剂油墨,不会在镜片表面留下印记。

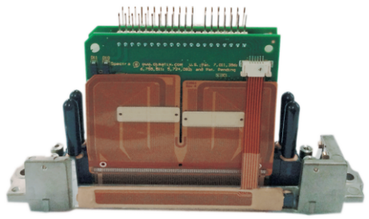
DIP300喷印机采用环保UV油墨和双工位冗余设计，自带每天的清洗程序、假日清洗程序,温控系统和保湿机构，最大程度地防止油墨堵塞喷嘴造成的Down机现象,简化维护保养,让你轻松、干净、环保喷印成为可能。

In mass production labs with 300 jobs/day, there are always clients asking for customization of their own pattern, with a small quantity but huge varieties. Pad printing by cliche is apparently unable to do the job. So digital inking printers, evolved from inkjet printers, came into market.

Compared to pad printing, digital ink printers can print any image you design and automatically finish any kind of image thanks to its combination with automatic identifying invisible mark. Unlike oil-based solvent, UV ink will not leave a mark on the lens surface after mark is erased by alcohol.

DIP300 uses environment friendly UV ink and is designed with duplex bit redundancy. Meanwhile, it comes with daily cleaning program, holiday cleaning program, moisturizing ink nozzle, ink temperature control unit to greatly prevent the nozzle from ink jam that will further leads to a Down machine. Its simplified maintenance makes it possible for you to experience an easy, clean and environmental friendly printing.



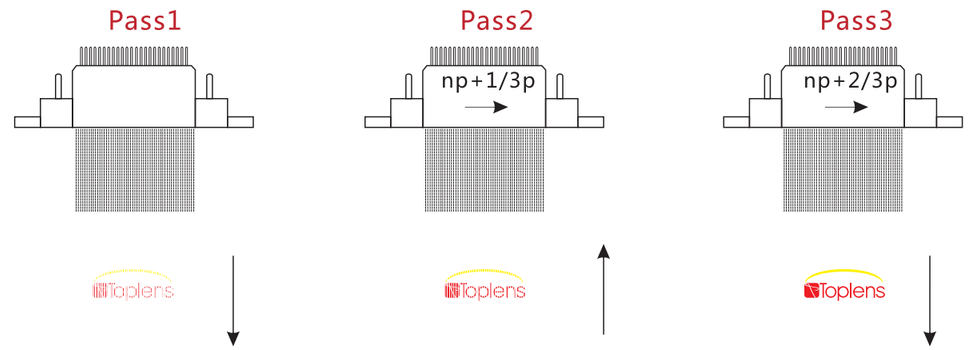


喷墨头
Inkjet Head

为了满足一部分用户对高分辨率的要求，使之有可与移印相比拟的效果，DIP300集成了细分插值系统分辨率从200DPI到1000DPI的可调，当有某个喷嘴堵塞时，这个细分插值系统尤其显示优势，可以用相邻的喷口来代替工作,解决坏点的问题。

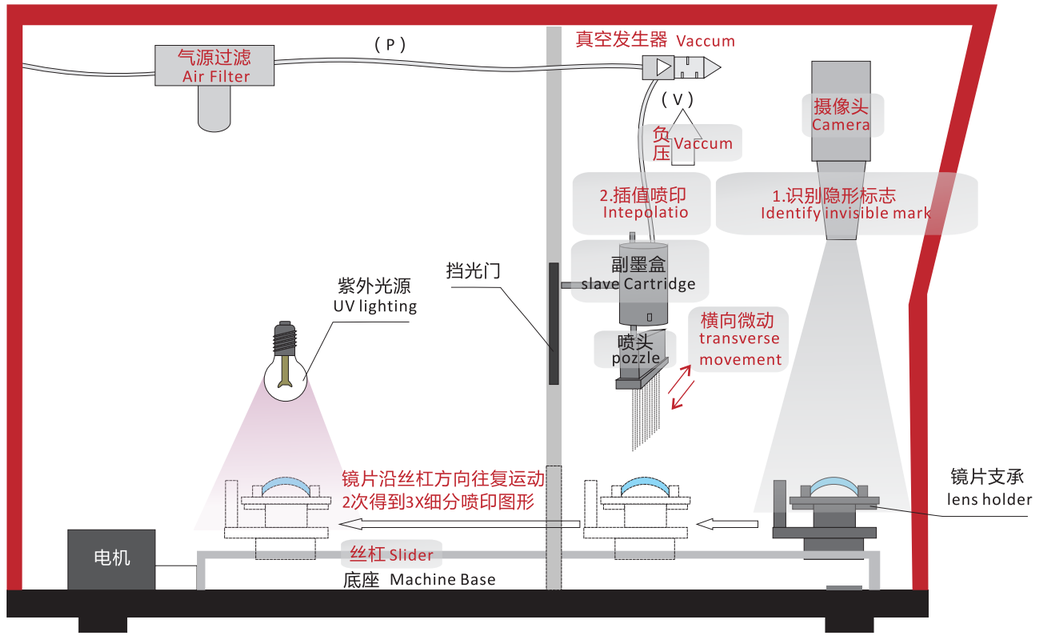
In order to meet clients' requirement of high-resolution inking so that it can have comparable results with pad printing, DIP300 introduces interpolation method in X-Y direction, resolution from 200DPI to 1000DPI adjustable. When there is a jammed nozzle, this in particular shows the advantages of interpolation system, solving the problem of dead pixels by replacing the nozzle with the adjacent ones.

3X细分插值原理(上如图)

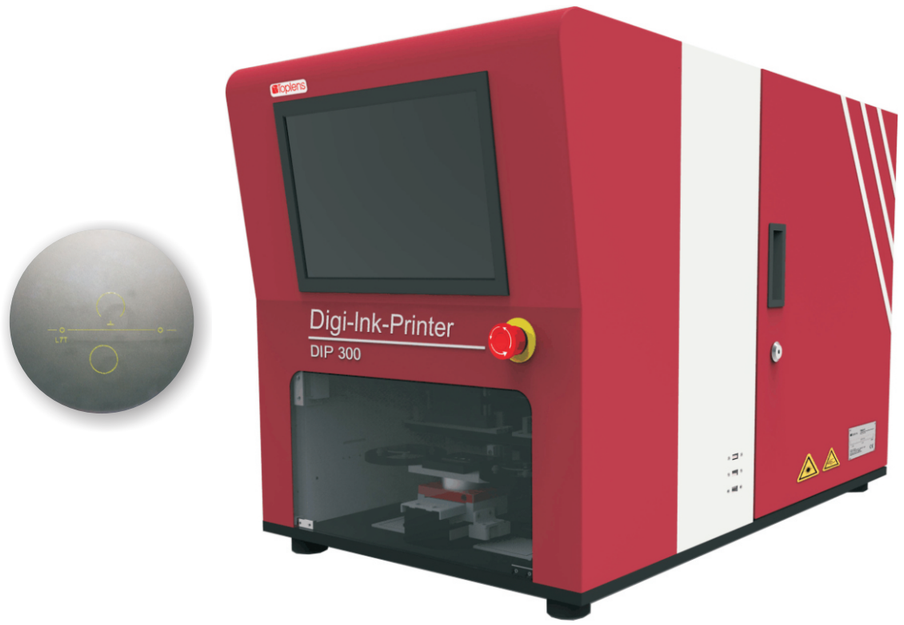


Schematic of Digital Ink Printer

数字喷印机的原理框图



DIP 300



技术特性

FEATURES

可喷印任何膜层的镜片，包括渐进	Able to mark any lens, including semi-finished,
镜片和半制片	Rx and Freeform lens
自动识别隐形标志，自动识别R/L镜片	Automatic R/L information and invisible mark reading
自动从服务器读取要喷印的图像	Automatic obtaining Jobfile/images
分辨率到800DPI到1200DPI	Resolution from 800DPI to 1200DPI
生产效率：600片/小时	Capacity up to 600 pcs/hr
双工位双喷头设计	Two-station design
采用环保UV油墨，颜色用户可选	Environment friendly UV ink
Y/Z精密移动平台，保证镜片的喷印质量	Y/Z precise movement platform
兼容 VCA and OMA 标准	Compatible with VCA and OMA standard
采用 1280×800, 12.1"的触摸显示屏	Display: 1280×800, 12.1" WXGA Touch LCD
采用Windows XPE系统	Windows XPE
专用每天清洗程序，维护方便	Easy daily maintenance
根据CE标准设计	Standard design in compliance with CE regulations

技术参数

TECHNICAL DATA

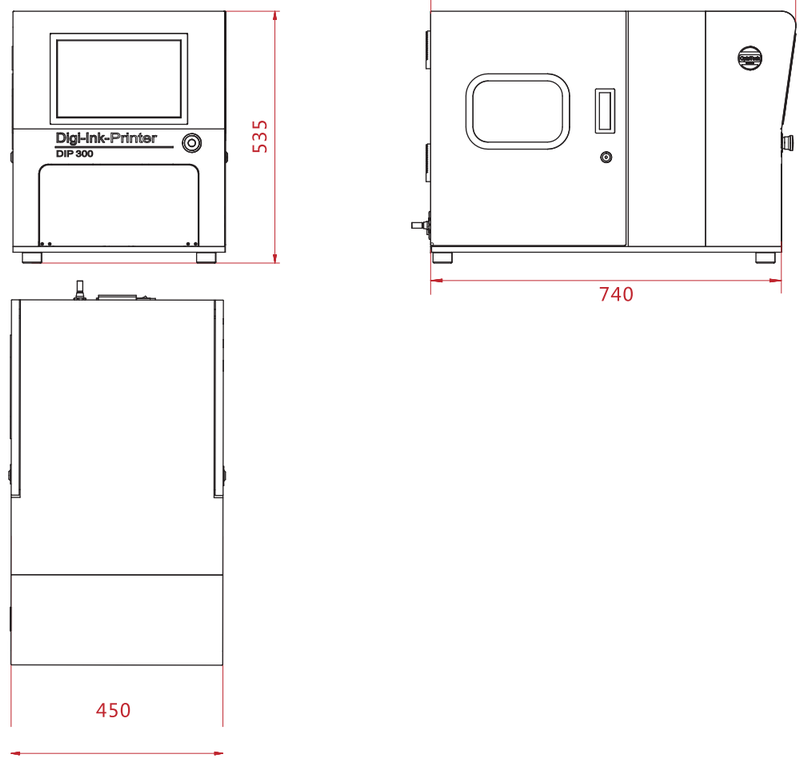
压缩空气	>4bar	Air Pressure
输入电源	100-230VAC 50/60Hz	Voltage
功率	800W	Power
外形尺寸	H×W×D: 525×450×750mm	Dimensions
重量	about 70 kg	Weight

附件

Accessories

品名 Items	规格 Description	部件号 P/N
喷头 Print Head	400dpi ,Steel	030-002-012
UV 油墨 UV Ink	Black	030-001-008
	yellow	030-001-007
清洗液 Flush	64*42	030-004-003

三视图

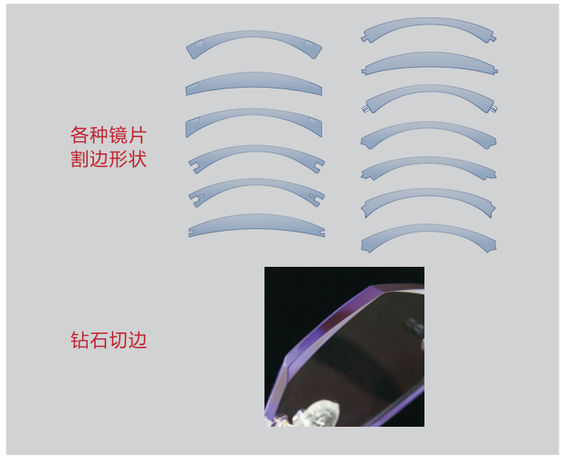


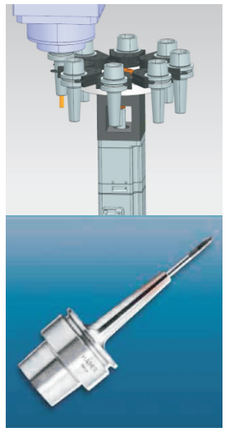
SmartEdger是目前市面上唯一的5轴5联动的割边装配中心，其All-in-One的设计就是要让人从繁杂的装配工作中解脱出来。工序包括割边、倒边、钻孔、开槽、抛光和钻石切边等。

基于EtherCAT工业总线运动控制模块的SmartEdger，可以对高基弯运动镜等高难镜片进行装配，特别是能够进行钻石切边，大大地解决了目前钻石切边人员市场短缺的难题。

SmartEdger is currently the only commercial 5-axis of lens crib center available, with its design of All-in-One freeing people from complicated fitting work. Its processing cycle includes crib, bevel, drilling, grooving, polishing and diamond trimming.

Based on EtherCAT industrial BUS motion control unit, SmartEdger can complete the fitting job with lens of high curves required by sports and other difficulties, especially diamond trimming, which greatly makes up the current shortage of diamond trimming professionals.





SmartEdger采用立式设计，同时具备水切和干切两种功能。内循环的水切可以确保你洁净的车间不像干切一样被污染，废渣收集系统可以让你轻松处理废渣，符合城市环保的要求。最高达40,000rpm的刀具，结合HSK-E25热缩刀柄，加上水切，可以在0.5分钟内完成常规镜片的割边加工。为了协调上述目标，SmartEdger采用了自动换刀器设计，8个刀位可以让你有足够的加工工序。热缩刀柄的引入，更让你加工镜片更加快速和精准。

为了榨干设备的极速性能，我们还准备了复合刀具，也就是一个刀具上有两种刀形，可以让你省去换刀耽误的3秒钟。

SmartEdger is designed in a vertical structure, with functions of both water-cut and dry-cut. Unlike dry-cut that will bring pollution, water-cut in the cycle makes sure your workshop clean, through its contaminated waste collection system that lets you easily deal with waste and conforms to the city requirement of environment protection. With the tool of up to 40,000 rpm combined with HSK-E25 shrink tool holder, plus water-cut, crib processing of conventional lenses can be done within 0.5 minute. In order to coordinate with these objectives, SmartEdger integrates an automatic tool shift with eight positions which allows you to have enough processing possibility. Thanks to shrink tool holder, it is possible to crib lenses faster and more accurately.

To maximize the speed performance of the equipment, we also prepared a Combi tool, with a design of two-in-one, which saves you the three seconds of ATC delay.

AirHold是我们的独创专利性技术，见下图结构。其采用随动方式。常规的随动方式和双工驱动方式都存在有速度差导致划伤镜片的可能性。而我们的技术采用静压支持，避免了速度差的产生。5轴联动的设计不仅可以让该款机器用于镜片装配，更可以用于板材镜架的数控成形。

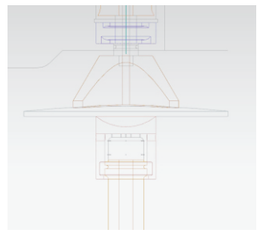
SmartDraw软件更是兼容OMA和VCA标准的3D镜片加工处理软件，可以实时显示3D的镜片形状，也可以让你操控工序参数。可以让你在切边前就可以看到切边后的效果，防止差错的发生。在3D环境中，你可以很方便地对要加工的工序进行编辑.为了提高加工效率，SmartDraw软件还提供脱机版本，你可以在普通的电脑中，比如在镜框扫描仪的工作电脑上，尽情地对你要加工的镜片进行精雕细琢，提高效率。同时你也可以设置要加工的工序和参数，这些参数会自动通过服务器上传到设备的加工序列中，在你喝咖啡的同时完成镜片的加工。

SmartEdger采用模块化设计，分数据处理模块、主轴模块、驱动模块、气源模块、冷切水模块、IO模块。得益于EtherCAT协议，SmartEdger开机后会自检各个模块，如果模块有问题，SmartEdger会直接告诉你出故障的单元或模块，让你轻松定位故障。

AirHold is our unique patented technology. Please see the following schematic. It adopts a follow-up driving mode. Conventional follow-up driving and double-side both have possible differences in turning that could lead to scratch. Our technology, on the other hand, could avoid the spend difference by hydrostatic support. 5-axis CNC can be applied not only to lens cribber machine, but also to the forming of plastic frames.

SmartDraw is a 3D lens processing software, compatible with OMA and VCA standard. It can display real time 3D lens shape and allow you to control process parameters, which lets you check the results before and after trimming to avoid mistakes. In a 3D environment, you can easily edit processes in order to improve processing efficiency. SmartDraw also offers an offline version, so that you can install it on other computers. You can enjoy lens crafting during the process, improve efficiency and set process parameters automatically uploaded through the server to process the sequence of jobs, completing lens processing while having a coffee.

SmartEdger is designed based on modules, consisting of data processing module, the spindle module, driver module, compressed air module, cooling water modules, and IO modules. Thanks to EtherCAT protocol, SmartEdger will check each module automatically at startup. If there is a module in question, SmartEdger will tell you which unit or module it is to help you easily locate the fault.


AirHold


Frame Forming

SmartEdger

可用于各类树脂和聚氨酯镜片的装配，包括单光、散光、渐进片和Sport镜片.可加工类型：全框、半框和无框等.工序：割边、开槽、倒边、钻孔、抛光和钻石切边。

for various plastics lens cribbing and fitting, including single vision, bi-focal,progressive and sports lens for full frame, semi-frame, rimless. Processing cycles includes cribbing, grooving, chambering, drilling, poli shing and diamond trimming

FEATURES

技术特性

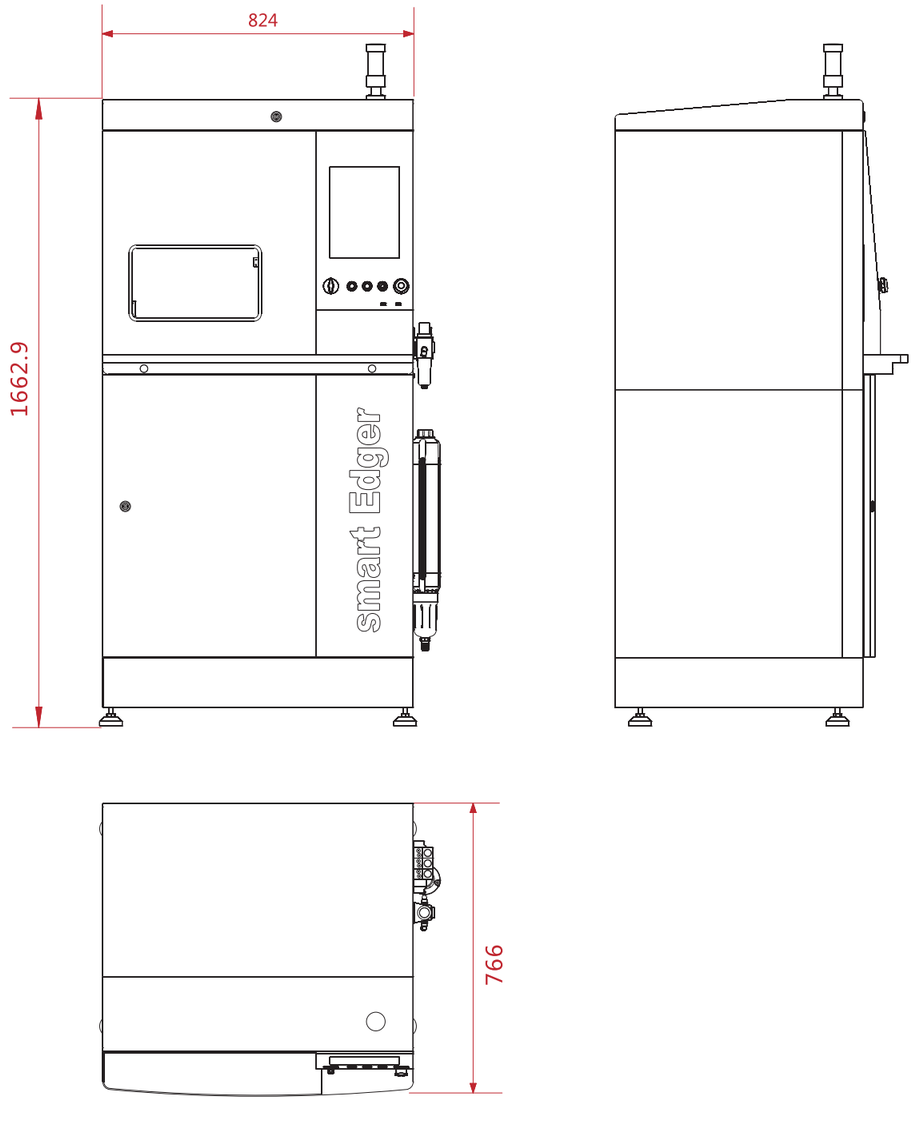
可干切或水切，自带25L冷切水箱	Enable both Wet & Dry cutting with 25L coolant tank
最大镜片：ϕ85mm	Max Diameter：ϕ85mm
数控轴系: X,Y,Z,B,C-5轴	CNCAxis: X,Y,Z,B,C-5Axis
数控协议：EtherCAT工业总线构架	CNC Protocol: Beckhoff EtherCAT
采用AirHold专利技术进行镜片的	Unique AirHold lens holding technology
夹持, 适用于Weco 和Nidek的夹头	Clamping chunk : Weco and Nidek
镜片基弯：最大12D	Base：12D
工具最大转速：40.000 RPM	Tool：40.000RPM
刀柄：HSK-E25热缩刀柄	Tool Holder：HSK-E25 Shrink
边厚测量：2D 探针系统	Edge detection：2DPin
自动换刀器：8个刀具工位	Auto Tool Changer：8 positions
镜框数据标准：OMA或3D STEP	Compatible with OMA standard or 3D STEP files
控制器	Controller: Industrial PC
显示器:	Display:12.1"
操作系统： Windows 7 嵌入式系统	OS：Windows7
根据CE标准设计	Standard design in compliance with CE regulations

TECHNICAL DATA

技术参数

输入电源	220V 50Hz	Voltage
功率	<2.5kW	Power
外形尺寸	824x766x1660mm	Dimensions
重量	about 750 kg	Weight

三视图



自由曲面设计（包括渐进多焦点）是车房中心的灵魂。自由曲面是指在曲面上光度成非对称的，能实现单一或多个光度优化的曲面，可以是A-Toric面，可以是渐进多焦点面，也可以是个性化单光曲面。

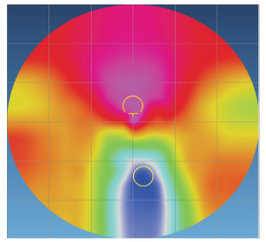
对于面光度有分布的自由曲面的生成，已经从求解高次非线性方式，有限元网格化平滑过渡到最新的有限元融合和几何光线追迹的技术。

我们讲自由曲面的设计，其实是包含两层含义：一是设计的框架，如通道长度，偏离量，面积分布等等。这方面往往不同公司有不同的定义。另外一个就是在相同框架下盲区的最大散度大小，通道宽度。一般来讲，盲区最大散光出现位置越远离镜片的有效光度区，越能让人眼舒服适应。

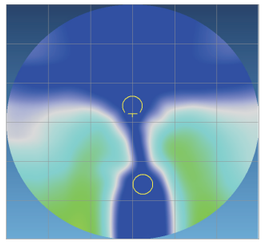
Free-form surface design (including progressive multifocal) is the soul of RX Labs. Freeform here is defined as lens surface with non-symmetrical optical power distribution that can be optimized to achieve a single or a plurality of the optical power, such as A-Toric surface, progressive multifocal surface or individual lens surface.

Solution to create such freeform with power distribution, has been evolved from high-order non-linear manner, finite element mesh of a smooth transition to the latest finite element integration and geometric optical ray tracing techniques.

Freeform surface design here actually contains two concepts: first, the design of the framework, such as the channel length, the shift amount, the area distribution and so on. This aspect is often defined differently among companies. The other concept is the maximum cylinder of astigmatism distortion area and the channel length within the same frame. In general, the further the maximum of cylinder spot in astigmatism distortion area is from effective optical power area, the more comfortable human eyes would feel.



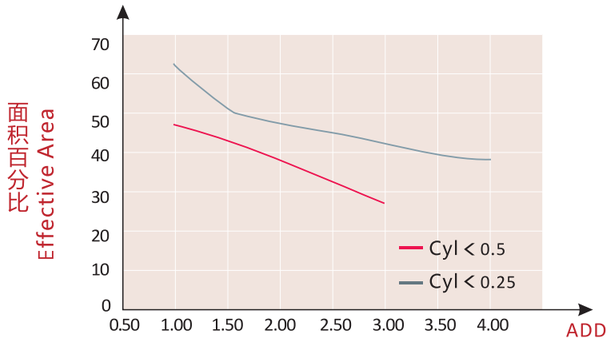
球光图



散光度

左图是一个典型的渐进多焦点的球光图和散光度

Typical Power and Cylinder Map



ADD from 1D to 4D area with Cyl<0.5

评定渐进设计好坏的几个参数 Some parameters to judge design

通道的宽度

ADD越大，通道就越窄。这是因为ADD越大，最大的散光就越大。通道两侧的散光就大。在ADD相同的情况下，通道的宽度直接相关于最大散光值和出现的位置。设计好坏的一个评价指标就是要让最大散光出现的位置远离中心有效区域(ϕ40mm)。

有效区域

(ϕ40mm)内的最大散光值，一般的设计这个值要大于ADD.好的设计则小于ADD。右图是我们ADD2.0典型设计的散光图。

最大散光

CYL<0.25D和0.5D的面积同整个镜片的有效面积比。一般来讲，ADD越大，有效面积比越小。请参考右侧图。

不同用途的设计，其实质就是调整近光区和远光区之间的分配比例。于是就有了室内设计，标准设计，室外设计，Office设计和抗疲劳设计等不同用途的设计。

The width of the channel

The bigger ADD value is, the narrower channels become. This is because the maximum cylinder of astigmatism increases with ADD value, which narrows the channel. If ADD value keeps constant, the width of the channel is directly related to the maximum cylinder value and the position where the astigmatism occurs. An evaluation on the design is to check whether maximum astigmatism will appear away from the effective center area (ϕ40mm).

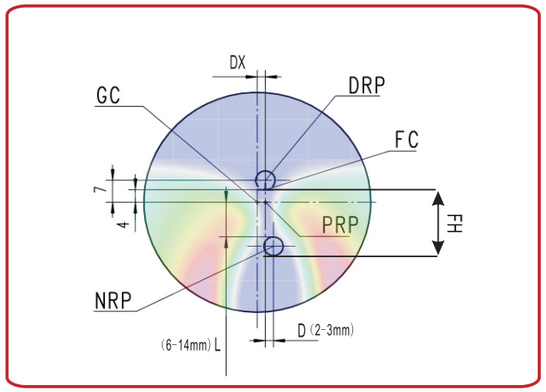
Effective Area

In effective area (ϕ40mm), this value is generally greater than ADD value while a good design can make it less than ADD value. The following graph is the typical cylinder map of ADD2.0 freeform we designed.

Maximum astigmatism cylinder

In general, the larger the ADD value, the smaller the effective area ratio, the ratio of the area with a CYL <0.25D and 0.5D to the entire area. Please refer to the following figure.

The essence of designs with various purposes is to adjust the distribution ratio between far view and near view areas. Then there is interior design, the standard design, outdoor design, Office design and fatigue design with different purposes.

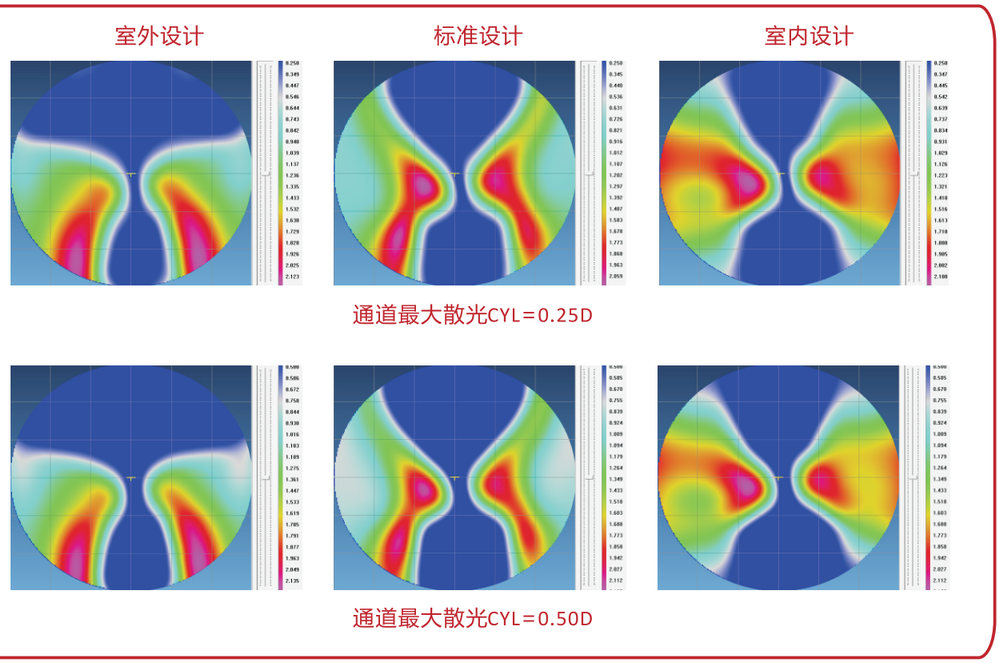


Progressive design

渐进设计

渐进设计是目前车房自由曲面设计里最常用的一种,按形状可分外渐进设计和内渐进设计。外渐进设计主要是玻璃模具的设计，内渐进主要是树脂镜片的设计。按视光区域分,则可分为双区或三区。双区是我们最熟悉的渐进设计，即远光、近光区;三区则是比较特殊的设计,如飞行员的眼镜就有近光、远光、近光三区,或者高尔夫的眼镜分远光、近光1、近光2。下面我们介绍一下Free4D的设计。

Progressive design is most commonly used among designs of free-form surfaces in labs, and can be categorized into PAL progressive design and backside progressive design based on the shape. PAL progressive design is mainly focused on the outside surface of glass mold, while backside progressive design is primarily for resin lens. Based on optometrist regional points, progressive design can be divided into dual-zone and triple-zone. We are most familiar with dual-zone progressive design, that is, far view/near view; three zones are specially designed, such as glasses for pilots which requires far view/near view1/near view2. Here we introduce Free4D design as follows



Outdoor Progressive design

渐进室外设计

渐进室外设计：室外设计是指用眼时间偏重于5m以远的一种设计，有些公司也叫硬性设计或开车镜设计。这种设计的特点是远用区域明显大于近光区域。主要适合于看远时间比较多的人使用，如司机，裁判员等佩戴。如图所示,Free4D设计的最大特点是最大盲区散光位于有效视光区的左下部，在有效视光区内的最大盲区散光小于ADD，通道宽并且近用区散光小于0.02D。

Outdoor Progressive design is for those who use their eyes most of the time to look at things at a distance of 5m and beyond, which is also called hard design or car design. Its feature is that far view area is significantly greater than near view area. It is mainly suitable for people like drivers, referees and so on. As shown in the graph, the most important feature of Free4D design is the biggest cylinder spot astigmatism at the bottom right of effective optical power area, with max cylinder of astigmatism less than 80% ADD value in the effective area, a wider channel and astigmatism cylinder less than 0.02D in near view.

Interior Progressive design

渐进室内设计

顾名思义是指用眼时间偏重于室内的一种设计，有时也叫软性设计。这种设计的特点是近用区域大于远光区域。主要适合于多数时间在室内的人佩戴，如研发和办公室人员。如图所示，这种设计最大特点是最大盲区散光位于有效视光区的上部，在有效视光区内的最大盲区散光小于ADD，通道宽并且近用区散光小于0.02D。

As its name suggests, Interior Progressive design is for those who spend more time using their eye indoors, sometimes called soft design. The feature of this design is that near view area is great than far view area, mainly suitable for people working mostly indoors, such as engineers and office staff. As shown in the graph, the most important feature of the Free4D design is the biggest cylinder spot astigmatism at the top left of effective optical power area, with max cylinder of astigmatism less than 80% ADD value and a wider channel and astigmatism less than 0.02D in near view.

Standard Progressive design

渐进标准设计

标准设计是兼顾室内室外两种使用场合,经常被称作中性设计。这种设计的特点是近用区域和远光区域基本相同。适合建设设计师，学生等选用。

Standard design is for both indoor and outdoor use, often referred to as a neutral design. The feature of standard design is its good balance between far view and near view, suitable for people like professors and students.

office 设计

Office design

一般的渐进片设计是以远光区为基准，向下加ADD的老化度数，所以ADD一般也叫下加光。但Office设计是以近光区的度数为基准，向上减动态光度。动态光度是根据看的远近来调节的。一旦看远距离确定,软件自动计算所需要的动态光度。Office主要适合于用电脑或阅读量非常大的人员，同时偶尔需要在4m范围内用眼的人员。如软件编程人员，票务人员。同时Office设计也可以当作一种高级的“老化镜”使用。它区别于老化镜的一点是可以看清晰4m范围内的电视和人物。

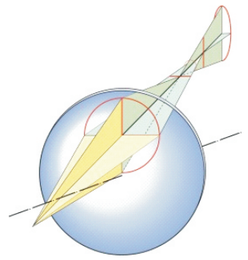
The general progress design is based on optical power in far view, plus down the aging degree of ADD. But office design is based on optical power in new view, minus the upward dynamic power. Dynamic power is adjusted based on the distance. Once the distance is determined, the software will automatically calculates the dynamic power required. Office design is mainly for IT engineers, ticket staff or people who require a large amount of reading and also need to occasionally use eyes within 4m range. Office design can also be used as an advanced “reading glasses”. Its difference from common reading glasses is to help people watch TV and other figures clearly within 4m range.

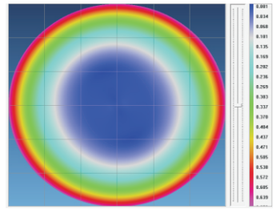
非球面设计

Aspheric design

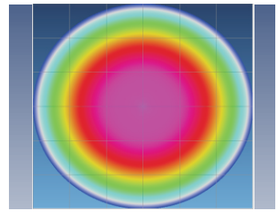
根据几何光学理论，对人眼视物效果影响最大的是斜轴像散。目前球面镜片的加工多采用最优基弯设计，即采用斜轴像散最小的前表面弯度。对于某些度数需要使用较大的基弯，以达到降低斜轴像散的目的，致使镜片的整体厚度偏厚。而采用Toplens公司的非球面设计就可以解决最优基弯设计的这个缺陷。当眼镜片的前表面采用从镜片中心到边缘曲率半径逐渐增加的非球面设计时，镜片前表面将变的平坦。同时非球面面形本身存在与球面不同的斜轴像散，通过合理的设计可以在一定程度上抵消另一个表面（球面或非球面）的斜轴像散。因此Toplens公司的非球面眼镜片设计可以不受最优形基弯的限制，在前表面较平的情况下达到与最优形基弯设计相同的降低斜轴像散的效果，使镜片变得更平、更薄、更美观。但是非球面设计不能像Atoric设计一样同时进行斜轴像散矫正和光度补偿。

According to aberration theory, the human eye vision is greatest impacted by oblique astigmatism. Currently spherical single lens normally adopt best base curve design, using the best front curve with minimum oblique astigmatism. In order to minimize oblique astigmatic, high curve best base has to be used for high diopter lens, resulting in overall thickness of lens. However, Toplens aspheric design will be able to solve this defect of best base design. The front surface of the spectacle lens becomes flatter when aspheric design has a curvature with an increasing radius from the lens center to the edge. Due to the fact that aspheric surface has different oblique astigmatism with spherical surface, oblique astigmatism of the other surface (spherical or aspheric) can be offset to a certain extent by rational design. Therefore, Toplens aspheric design won't be limited by best base curve, achieving the same result of minimum oblique astigmatism to obtain flatter, thinner and more attractive lens. However unfortunately, aspheric design is not able to make oblique astigmatism correction and power error compensation simultaneously like Atoric design.





非球面设计散光图
Cyl Map



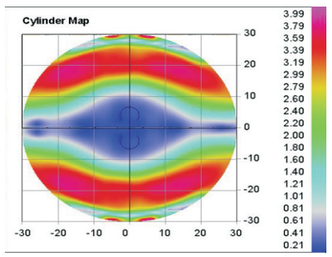
非球面设计球光图
Power Map

Atoric 设计

Atoric Design

Atoric设计是目前单光镜片里面的最热门的设计。Atoric设计的镜片不管外表面是球面或非球面，内表面一定是具备矫正像散功能的非旋转对称，有两条母线的非球面。普通单光，非球面或Toric设计，只有一个旋转对称的基弯或两个不同光度的母线，但是每条母线的在子午和弧矢方向各有不同的误差，因而不能消除球散光或斜轴散光，只能通过选择基弯尽可能让斜轴散光降低。Atoric同普通散光有两条不同的母线，但是Atoric同普通散光Toric不同的是每条母线都要非球面进行优化，所以Atoric可以看成两个不同非球面曲面的融合。Atoric设计的镜片比相同光度的同种镜片更薄，但是采用Atoric设计的主要原因是矫正离轴光线（离开中心区域）的球散光或斜轴散光，使之比一般球面和非球面设计有更好的清晰视野。

Atoric design is currently most popular in the market. Whether the front surface of an atoric lens is spherical or aspheric, the lens back surface always provides the correction for astigmatism, a type of aspheric surface that is atoric, not toric. A problem will appear while the spectacle lens used to correct the off-axis optics of a spherocylinder lens, only one base curve is available to correct field-of-view errors, yet there are two meridians of different power, and each meridian has its own sagittal and tangential errors. The lens designer must compromise, choosing a base curve that minimizes a blur value, a weighted average of the errors for each meridian. The atoric back surface has two principal meridians, as does a standard toric surface, but each principal meridian of an atoric surface has a noncircular cross-sectional shape. the finished atoric lens has a back surface that is a complex combination of two different aspheric curves. Atoric lenses are flatter, thinner, and lighter than spherical lenses of the same material and power, but the primary reason to use an atoric lens design is to improve off-axis image quality for sphero-cylinder lenses. The off-axis image quality of an atoric lens can be better than that of a well-designed spherical or aspheric lens.



Personalized Design

个性化设计

根据几何光学像差理论，任何一个光学系统有可大致分为7种像差，他们是像散，场曲，畸变，轴向色差，垂轴色差，慧差和球差，当人眼往镜片中心区域往边上区域看时，前面4种像差会显著影响视觉效果。个性化设计是根据每个用户的镜框的面倾角,前倾角,后眼距等参数定制镜片，针对眼球的每个视物方向优化设计镜片面形，达到扩大清晰视域、提高配戴舒适度的效果。其本质就是计算了眼镜片各处的佩戴光度。

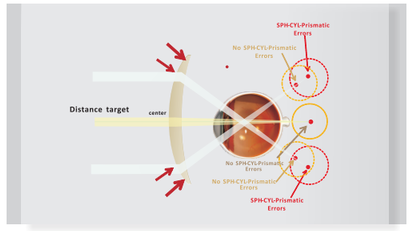
根据佩戴光度的定义，平行细光束入射眼镜片后出射光束的主光线经过眼球旋转中心，并且出射光束的会聚点位于距眼球旋转中心固定距离处的球面上，佩戴光度的计算需要找到入射主光线的方向，根据光路可逆原理，入射主光线的方向通过求通过眼球旋转中心的光线的反向出射光线得到，然后找到出射光束的会聚点（子午和弧矢像点），计算会聚点到眼球旋转中心的距离，减去镜片后顶球面的半径，取倒数后即可得到佩戴光度.人眼在不同方向透过镜片观察物体时，镜片的佩戴光度是变化的.一般来讲，有外散光和球光的双重变化，而这这是导致人眼在在头不转动的情况下，往左右看不清楚的原因所在。

Free4D软件附带了光线追迹进行光度补偿的功能，可进行个性化设计，使人眼在360度范围内都非常清晰。

Personalized custom design will collect parameters of each user's frame face form angle(wrap angle), pupil distance, pantoscopic tilt angle, Cornea Vertex Distance(CVD) to optimize the design of the lens surface to make the wearer have a clear view in different direction for each eye to improve wearing comfort. Its essence is to calculate the wear optical power of lens surface.

How to calculate wearing power? According to definition of wearing power, we assume a bundle of parallel light ray entering a spectacle lens, the eye's center of rotation, on far point sphere, which is the sphere that eye can see clear without lens. The point to calculate wearing power is to define direction and position of incident principal way. According to the principle that path of light is reversible, direction of incident principal ray can be obtained by reversing outgoing light rays through the eyeball center of rotation, then finding the point of convergence of light beams on the far point sphere (the tangential and sagittal image points), calculating the distance from the convergence point to the center of rotation of the eyeball, minus the radius of the Vertex Sphere, and the reciprocal of remaining distance is the wearing power. In general, when human eyes look in different directions through lens, wearing power of the lens is variable. Mostly the variance in both oblique astigmatism and power is the reason causing human eyes unable to view things on their sides clearly without moving their heads.

Free4D ray tracing software comes with power compensation function, and can be personalized to enable human eyes to view very clearly in the range of 360 degrees.

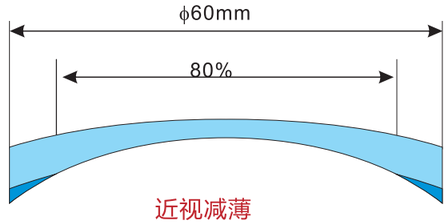


Lenti Design

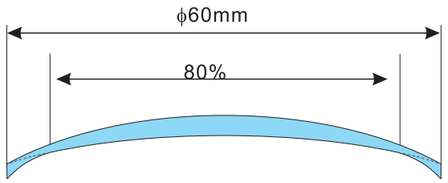
减薄设计

减薄设计是通过对视光区外的区域,在不影响视觉效果的情况下,对镜片进行减薄的处理,使之外形美观。下面是近视和老化眼镜的减薄处理效果。为了让操作者直观设计镜片。

Lenti design is to reduce the edge zone out of vision zone to make the lens thinner and nicer but without affecting visual effects. Here are two separate examples of how to cut lens for minus and plus lens.



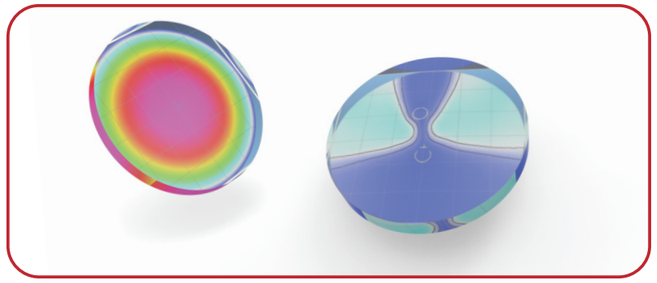
近视减薄



老花减薄

Free4D凝聚了精密光学，应用数字和视光学的最新技术，可以让用户自行调整设计参数，生成自己的独特渐 进多焦点设计，更在三维形状的基础上增加光度显示，成4D模型。Free4D可以提供4种不同的版本可供用户选择.

Free4D is a combination of precision optics, the application of latest digital and visual optics technology, which allows users to adjust parameters and build their own unique progressive multi-focal designs. Free4D also can show power together with dimensions to be 4D display in cube. Free4D provides four different options for RX Labs.



	ADD可变 ADD Variable	通道可变 Corridor Variable	面积比例可变 AreaVariable	最大散光出现位置可变 Max Cyl position Variable	镜片 plastic	模具 Mineral Glass	个性化 Personalized
Basic	+	–	–	–	+	–	–
Standard	+	+	+	–	+	–	–
Gold	+	+	+	+	+	–	+
Platinum	+	+	+	+	+	+	+

CTC500

CTC500是一种利用白光干涉原理进行厚度测量的仪器，特点是非接触测量，精度高。可广泛用于透镜和树脂镜片的非接触式测量。

CTC 500 utilize white interferometer to measure center thickness. its unique is non contact and high accuracy.

FEATURES

技术特性

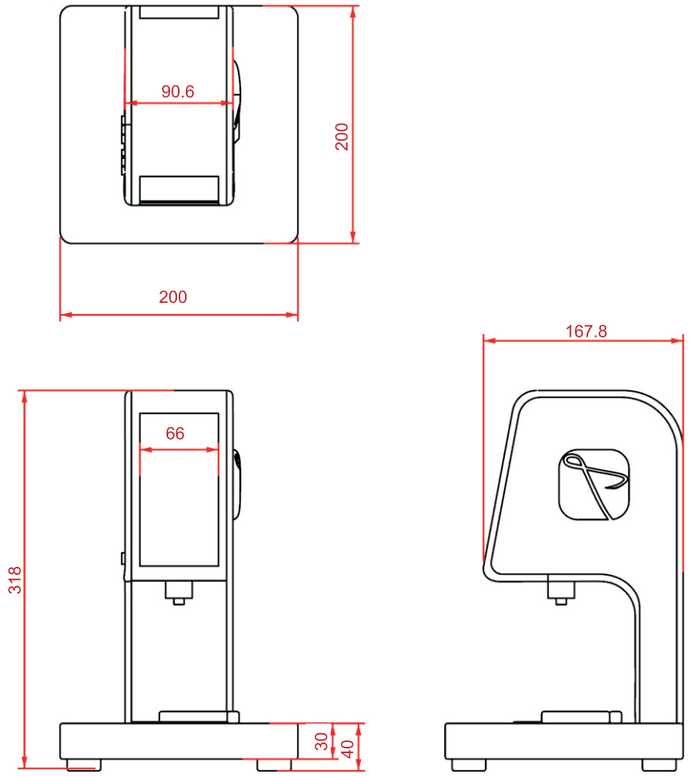
用于光学镜片的非接触中心厚度测量	non contact center thickness measurement for optical lens
4.7" LED照明LCD	Display
可同服务器联机通信	linkabe to RX sever
可设定中心厚度公差	center tolerance setting
可进行日志数据统计	log file

TECHNICAL DATA

技术参数

测试时间	2 seconds	test cycle
精度	0.1 μm - 1μm	accuracy
供电	5V@2A	Power Supply
操作系统	Andriod	OS

三视图



RX Meter 车房计

目前在车房系统中，因为现在没有镜片能在线检测的仪器，特别是高弯度的镜片，用软抛第一次往往做不准。

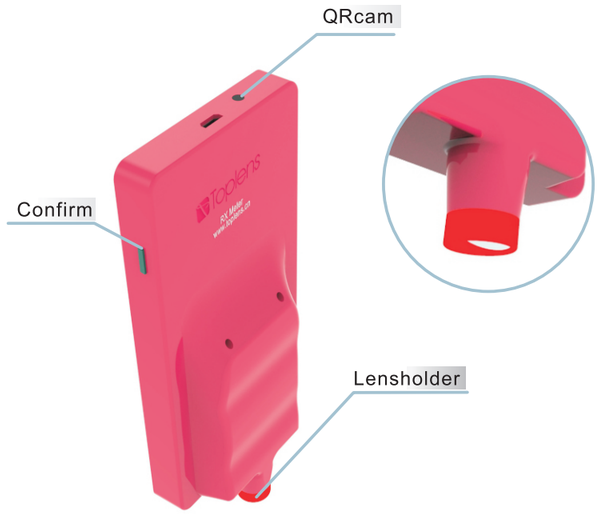
作为精密光学的从业者，我们有使命去思考这个问题，于是在2013的一个下午,一项新的专利技术，一个新的Baby车房RXmeter诞生了。RXMeter采用反射式光焦度测量原理，手持式测量近光和远光光度同工单服务器里面的理论值进行比较，从而判断镜片是否合格或需要返修。大大提高了良品率和杜绝了光度不准的浪费。

RXMeter的另外一个功能就是可以测量车房毛坯的基弯。让车房计算软件根据实际的基弯计算要加工的理论面形，减少因毛坯基弯不准造成的误差的报废。

Because there is no focimeter available to measure lens power with blocker, it is disastrous especially for high curve lens. It is not easy for flexible polishing to make sure that surface power will be in tolerance after polished.

As a precision optics engineer, it is our mission to solve this problem, so one afternoon in 2013, a new patented technology, a new baby—RXMeter was born. RXMeter utilizes reflective optical power measurement principle, handheld measures near view and far view zone power to compare with theoretical value of Jobfile in server to determine whether lens is qualified or needs repair, which well improves the yield and eliminates the waste due to power that is beyond tolerance.

Another feature of RXMeter is the ability to measure base curve of blank. After base curve is obtained by RXMeter, it will be transferred to lens calculation program automatically to correct real base curve data, which lets lens calculation program to be processed in accordance with the actual base curve, to reduce scrap due to imprecise base curve data.



目前车房在用的检测方法是:镜片抛光后进行激光打标，下盘后用胶皮标识近光和远光的区域，然后用普通角度计测量光度。这种检测办法有个问题。如果发现光度不合格，虽然可以利用激光隐形标志二次上盘,但也会存在抛光没有去除原先的激光标记的问题，也就是激光二次打标会出 现左右轻重的问题，镜片必须要报废。而RXMeter在线测量仪器的出现，将原先的开环生产变成了闭环生产，精细打造车房镜片才真正成为可能,从此远离报废.对于玻璃渐进多焦点磨具生产而言，闭环尤其重要。

RXMeter采用一体化密封设计，防止车房的灰尘对内部光学系统的污染，保证长期工作的稳定性。

另外RXMeter还可以通过Wifi方便地连接你的服务器的车房系统，共享数据。

Current measuring method used in RX Lab is: to mark reference points on lens surface and de-block it after lens processing, through power checks by foci meter staff of far view and near view zone indicated by rubber patter, but it has a problem. If you find lens power out of tolerance, although you can re-block finished lens by invisible mark, you will still have to face bad engraving quality while applying for a second time because you cannot keep the second engraving at the same position and unbalance stock removal while flexible tool polishing will not have uniform stock removal. Thanks to insitu RXMeter, original open-loop production is replaced by a closed-loop, making it possible to refine RX lens and stay away from rejection. For glass mold industry, it is extremely important and necessary to guarantee smooth and quality production.

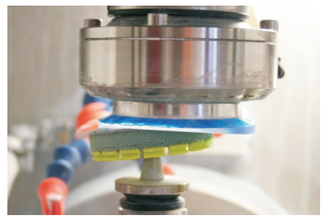
The integrated seal design of RXMeter prevents dust in labs from polluting internal optical system and ensures its long-term stability.

In addition RXMeter can also easily connect to your RX server via wifi to exchange data.

How to Use RXmeter

建议使用的流程图

Step1:3M胶带贴膜后上盘
Step1:Block lens with 3M tape



Step2:车房加工
Step2: Surfacing

Step3:扫条码从服务器拿
到加工面的理论数据
Step3:obtains Job Files from server

Step4:测量近光和
远光区的度数
Step4:measure far and
near view power

RX Meter

技术特性

FEATURES

自由切换曲率半径/光焦度/不同散度格式显示	Radius/Power/Cylinder display mode
测量范围: 灰色机:凸面 0D-12D,	Range: Grey RXMeter: for convex: 0D to 12D,
红色机:凹面-1D到-12D	Red RXMeter: for concave: 0D to -12D
精度: 绝对精度0.01D	Accuracy: absolute 0.01D
分辨率0.001D	Resolution 0.001D
快速的标定程序	Quick calibration program
4. 7in 1920x1080显示屏，带CTP触摸屏	4. 7 inch 1920x1080 display with CTP touch screen
数据交换接口:WLAN 802.11ac/WCDMA	Data Interface: WLAN 802.11ac/WCDMA
尺寸: 136x64x17mm	Dimensions: 136x64x17mm
电池: 2500mAh	Battery: 2500mAh
电源接口: MicroUSB	Power Input: 5V @2A, MicroUSB