HAN*S SCANNER
大族思特

使用说明书
USER MANUAL

20mm光斑激光扫描头

20mm ÁŠæ•^¦ÁÙ&æ}ÁP^æå

深圳市大族思特科技有限公司

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声 明
STATEMENT

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在没有得到深圳市大族思特科技有限公司的允许之前，用户不可以自行修改20mm光斑激光扫描头里面的机械结构或者电子元件，也不允许用户以任何形式对扫描头进行拆分、拍照和研究。
为持续改良产品考虑，深圳市大族思特科技有限公司会保留对本说明书中所包含的信息进行更新或者修改而不另行通知用户的权利。

Before the approval of Shenzhen Han's Scanner S&T Co., Ltd. users are not allowed to modify the mechanical structure or electronic components inside the 20mm laser scan head, nor to split, photograph or study the scan head in any form. Consideration for continuous improvement products, Shenzhen Han's Scanner S&T Co., Ltd. reserves the right to update or modify the information contained in this manual without further notice to users.

商标声明
Trademark statement

HAN＊S SCANNER 为深圳市大族思特科技有限公司的注册商标，并对其享有独占使用、许可使用、转让、续展等各项法定权利，未经深圳市大族思特科技有限公司允许，任何组织或个人不得在商品上使用相同或类似的商标。

HAN＊S SCANNER It is registered trademark of Shenzhen Han's Scanner S&T Co., Ltd., Shenzhen Han's Scanner S&T Co., Ltd. enjoys various legal rights such as exclusive use, license use, transfer, renewal etc. No organization or individual is allowed to use the same or similar trademark on product without the permission of Shenzhen Han's Scanner S&T Co., Ltd..

注意
Note

在所规定的支持保修范围内，深圳市大族思特科技有限公司履行承诺的保修服务，超出所在规定的保修范围的，恕不承担保修服务。对于在使用本产品过程中可能造成的损失，深圳市大族思特科技有限公司不承担相关责任。如发生任何争议，应按中华人民共和国的相关法律解决。
深圳市大族思特科技有限公司随时可能因为软件或硬件升级对使用说明书的内容进行更新，所有这些更新都将纳入使用说明书新的版本中，恕不另行通知。

Within the scope of the specified support warranty, Shenzhen Han's Scanner S&T Co., Ltd. fulfills the promised warranty service, while if beyond the scope of the provisions of the warranty we will not bear the warranty service. Shenzhen Han's Scanner S&T Co., Ltd. does not bear any responsibility for any losses that may occur during the use of this product. In the event of any dispute, it should be resolved in accordance with the relevant laws of the People's Republic of China.
Shenzhen Han's Scanner S&T Co., Ltd. may update the contents of this instruction manual at any time due to software or hardware upgrade. All these updates will be included in the new version of the instruction manual without prior notice.

执行标准
Executive standard

本产品执行标准：Q/HANS 040-2018。

Executive standard of this product: Q/HANS 040-2018.

版本说明
Release Notes

本资料版本为B版，对应产品系列为：20㎜光斑。该操作使用说明书是产品的一部分，是20㎜光斑激光扫描头的安全操作指南。每次安装和操作前，请仔细阅读该使用说明书。对该使用说明书有任何疑问，请联系深圳市大族思特科技有限公司。
请保留好该使用说明书，因为它是提供售后服务及维修的凭证。

This manual version is English B, corresponding product series: 20mm laser scan head. This manual is a part of the product and is a safe operating guide for the 20mm laser scan head. Please read this instruc-tion manual carefully before each installation and operation. Any question about this manual please contact Shenzhen Han's Scanner S&T Co., Ltd..
Please keep this manual as it is the proof of providing after-sales service and maintenance.

符号说明
Release Notes

为了预防可能对人体造成的伤害或设备损坏，本使用说明书用以下安全标志加以提示，在使用设备时请注意标志提示的内容，以确保您和周围人员的安全以及正确使用设备。

In order to prevent possible harm to the human body or damage to the equipment, this User's Guide uses the following safety signs to indicate that, when using the equipment, please pay attention to the content of the sign to ensure the safety of you and the surrounding people and proper use of the equipment.

当 心 激 光 Beware of Laser
激光辐射注意内容，存在激光辐射的危险，请做好激光防护措施！ There is a danger of laser radiation. Please take laser protection measures!

当 心 触 电 Danger! Electric shock
电气安全注意内容，可能引起触电的危险，造成人身伤害！ It may cause electric shock and cause physical injury !

当 心 火 灾 Warning Fire
防火安全注意内容，可能引起火灾，注意防火！ It may cause fire please take fire prevention measures !

注 意 安 全 Be careful
一般注意事项，如不遵循该提示内容操作，可能造成人员伤害或设备的损坏和故障 General precautions, it may cause personal injury or equipment damage and malfunction if you do not follow the instructions.

说 明 Instructions
对操作内容的描述进行补充和说明 Supplement and description to the description of operation content.

目 录
CONTENTS

1.1欢迎 Welcome

感谢您购买深圳市大族思特科技有限公司20mm光斑激光扫描头。如果您是第一次使用该产品，请在安装使用前务必仔细阅读此使用说明书。（以下简称为扫描头）

Thank you for purchasing our 20mm laser scan head. If you are using this product for the first time, please read this manual carefully before installation. (hereinafter referred to as scan head)

1.2公司简介 Company Profile

深圳市大族思特科技有限公司是由上市公司—大族激光科技产业集团股份有限公司（股票名称：大族激光，股票代码：002008)投资组建的控股子公司，是一家集技术研发、生产和销售为一体的国家级高新技术企业。

Shenzhen Han's Scanner S&T Co., Ltd. is a wholly owned subsidiary of the listed Company Han's Laser Technology Industry Group Co., Ltd.(stock name: Han's Laser, stock code: 002008). It is a high-tech enterprise that integrates technology research, development, production and sales.

大族思特自2017年成立以来，致力于振镜产品在国内的研发、推广、应用，还为客户提供专业的振镜系统扫描解决方案，得到了广大客户的支持和信赖，是国内振镜电机的领先者。

Since the galvanometer product line established in 2005, we have been committed to the development, promotion and application of galvanometer products, and we also provide professional galvanometer scanning solutions for our customers. We have gained the support and trust of our customers and are the leader of galvanometer motors in China.

● 产品

大族思特拥有专业的机械、软件、光学、电子、工艺测试等研发团队，拥有多项实用新型及发明专利，除了研发标准振镜产品，还为客户提供专业的振镜系统扫描方案。现产品有系列化的光电数字振镜系统、系列化的光栅数字振镜系统、音圈电机、HASHU打标系统等。国内首建流水线式振镜生产线，振镜扫描系统年产量可高达三万套；扫描头和振镜系统解决方案已成功应用于手机3C行业、食品包装、烟草行业以及医疗技术等领域。

Han's Scanner has professional R&D Teamon machinery, software, optics, electronics, process testing,etc. We have obtained a number of model Utility model and invention patents, besides R&D standard galvanometer products we also provide professional galvanometer system scanning solution for our clients. Now we have series product of Photoelectric digital galvanometer system, Grating digital galvanometer system, voice motorand HASHU marking system, ect. Han's Scanner is the pioneer of pipelined production for galvanometer products, annual output of galvanometer scanning system about 30,000 sets. Our scan heads and system solutions have been successfully applied in the mobile 3C industry, food packaging, tobacco industry and medical technology etc.

● 质量

大族思特对已定型产品在其来料、加工过程、整机、出货各个环节严格把关，确保出货产品的性能和质量。

Han's Scanner strictly controls the incoming materials, processing processes, complete machines, and shipments of established products to ensure the product's performance and quality.

2.1简介 Brief introduction

　　该操作使用说明书是产品的一部分，是20㎜光斑激光扫描头的安全操作指南。每次安装和操作前，请仔细阅读该使用说明书。对该使用说明书有任何疑问，请联系深圳市大族思特科技有限公司 。请保留好该使用说明书，因为它是提供售后服务及维修的凭证。深圳市大族思特科技有限公司拥有随时更新但不通知客户的权利。

This manual is a part of the product and is a safe operating guide for the 20mm laser scan head. Please read this instruction manual carefully before each installation and operation. Any question about this manual please contact Shenzhen Han's Scanner S&T Co., Ltd.. Please keep this manual as it is the proof of provid-ing after-sales service and maintenance. Shenzhen Han's Scanner S&T Co., Ltd. has the right to update or modify the this manual without further notice to users.

2.2产品说明 Product Description

　　该使用说明书以光斑直径为20㎜，激光波长为1064nm为例介绍说明。对于光斑直径为20㎜,激光波长为532nm、355nm、10.6um的系列产品使用，请参考本操作使用说明书内容，不同之处不再说明，请注意镜片和激光器的差异性，以保证产品的安全使用。咨询详细内容请按说明书中联系方式来电咨询。

This manual takes 20mm aperture, 1064nm laser wavelength as an example to explain. For the use of prod-ucts with 20mm aperture, laser wavelength of 532nm, 355nm 10.6um, please refer to this operation instruc-tions. The difference between different laser wavelength will not be explained, please pay attention to the difference between the lens and the lasers to ensure the safe use of the product. For details, please contact us according to the contact information in the manual.

2.3物品清单 List of items

标配件 Standard accessories：
- 扫描头 Scan head
- 使用说明书 User's Guide

可选件 Optional：
- F-Theta镜 F-Theta lens
- 控制卡和打标软件 Control card and marking software
- 控制卡和方头间的连接电缆 Connection cable between control card and scan head

2.4产品说明 Product Description

　　出货前产品已经经过严格的检查，保证顾客购买的产品没有任何加工或者材料上的缺陷。质保的有效时间为12个月。
　　保修服务只限于一般正常使用下有效，以下情况深圳市大族思特科技有限公司无义务维修

- 易碎纸损坏
- 光学元件损坏
- 非深圳市大族思特科技有限公司人员进行维修造成的损坏
- 非深圳市大族思特科技有限公司人员改动本产品造成的损坏
- 由于用户不正确使用或者操作不当而引起产品损坏
- 用户使用不正确的激光功率或者由于用户不正当的调整而引起的损坏
- 不正确触摸或者拭擦导致镜片的损坏
- 由以上原因引起的循环损坏

Each product has undergone a rigorous inspection before shipment to ensure that the product customer received has no processing or material defects. The warranty is valid for 12 months.

Warranty service is only valid under normal use. For the following conditions, Shenzhen Han's Scanner S&T CO., Ltd. has no obligation to repair.

- Fragile paper broken
- Optical components Damaged
- Damage caused by non-Shenzhen Han's Scanner S&T CO., Ltd. personnel repairs
- Damage caused by non-Shenzhen Han's Scanner S&T CO., Ltd. personnel modification to the product
- Damage caused by improper use or improper operation
- Damage caused by using incorrect laser power or improper adjustments by the user
- Damage caused by incorrect touch or wipe the lens
- Cyclic damage caused by the above reasons

2.5制造商 Manufacturer

深圳市大族思特科技有限公司
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网站:www.hansscanner.com

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Address: 4F Building No.4, Han's Laser Industry Park, No.128 Chongqing Street, Fuyong, Bao'an District, Shenzhen City, Guang Dong, China.
Tel: 0755-23041055   Email: hansscanner@hanslaser.com
Web:www.hansscanner.com

3.1扫描头 Scan Head

　　扫描头可实现激光束在X方向和Y方向的偏转。这将会生成一个二维平面区域，激光束可聚焦到此二维平面的任何位置，这个二维平面区域就是标刻范围。

　　激光束偏转是由两个扫描振镜驱动镜片实现的。方头有一个进光孔和出光孔，激光束由进光孔进入方头，在方头内偏转后，由出光孔发射出去。如图1所示。出光孔或者敞开，或者装F-Theta镜头，或者装保护镜窗。

The scan head can deflect the laser beam in the X and Y directions. This will create a two-dimensional planar area where the laser beam can be focused anywhere on this two-dimensional plane. This two-dimensional plane area is the marking range.

Laser beam deflection is achieved by two scanning galvanometer mirrors. The scan head has two holes, one for light input and another for light output. The laser beam enters the scan head from the input hole, and emit out from the output hole after deflected, as shown in Figure 1. Output hole open or install F-Theta Lens or install protection window.
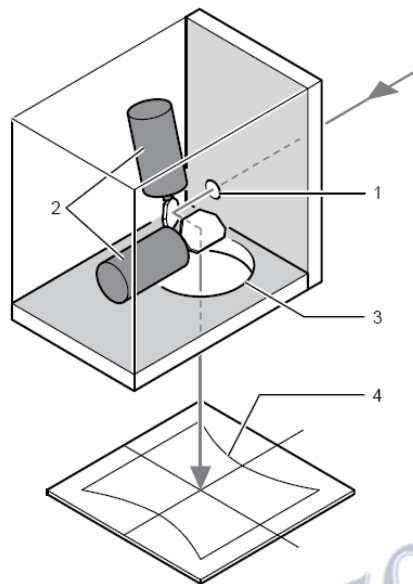
图 1/ Figure 1

1.入光孔 Light input hole　　2.带镜片的扫描振镜　Galvo with scan mirror
3.出光孔 Light output hole　　4.标刻范围 Marking Range

3.2F-Theta镜 F-Theta Lens

　　F-Theta镜是专门为二轴扫描方头设计的。它可以将激光束聚焦到标刻范围内任意一点的位置，同时它还会对二轴扫描系统存在的固有桶状变形进行补偿 。如图2所示。其它变形需要通过方头的驱动进行校正补偿。

The F-Theta Lens is designed specifically for two-axis scan heads. It can focus the laser beam to any point within the marking range, and it also compensates for the inherent barrel distortion that exists in the 2-axis scanning system. As shown in Figure 2. Other distortions need to be corrected and compensated by the drive of scan head.
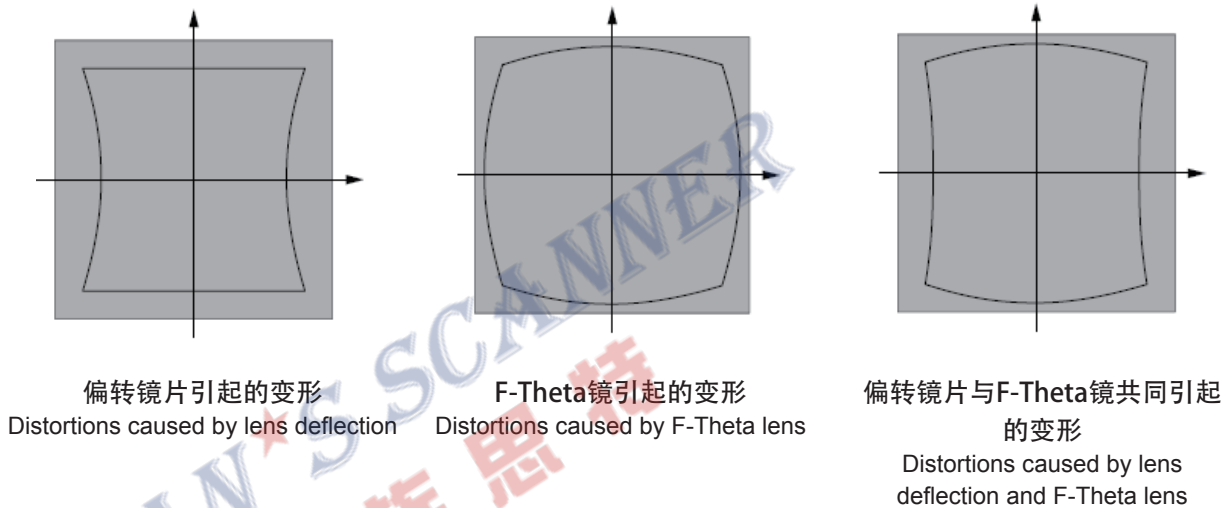
偏转镜片引起的变形
Distortions caused by lens deflection

F-Theta镜引起的变形
Distortions caused by F-Theta lens

偏转镜片与F-Theta镜共同引起
的变形
Distortions caused by lens
deflection and F-Theta lens

图 2/ Figure 2

3.3接口定义 Interface definition

扫描头通过DB25母头与控制卡连接。所有信号兼容XY2-100标准协议。DB头引脚的定义如图3所示。

The scan head is connected to the control card via the DB25 female head. All signals are compatible with the XY2-100 standard protocol. The definition of the DB header pin is shown in Figure 3.

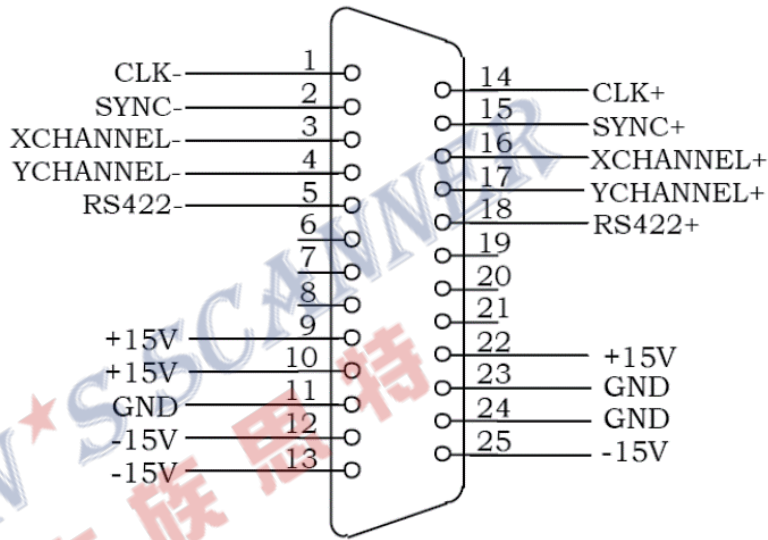| 管脚Pin	名称 Name	说明Explanation
1、14	CLK－／CLK＋	时钟信号－／时钟信号＋ Clock Signal－／Clock Signal＋
2、15	SYNC－／SYNC＋	同步信号－／同步信号＋ Synchronization signal－／Synchronization signal＋
3、16	XCHANNEL－／XCHANNEL＋	X 振镜信号－／X 振镜信号＋ X galvanometer signal－／X galvanometer signal＋
4、17	YCHANNEL－／YCHANNEL＋	Y 振镜信号－／Y 振镜信号＋ Y galvanometer signal－／Y galvanometer signal＋
5、18	RS422－／RS422＋	备用 Spare
9、10、22	＋15V	振镜＋15V 电源 Galvanometer +15V power supply
11、23、24	GND	振镜地 Galvanometer
12、13、25	－15V 电源 Power supply	振镜－15V 电源 Galvanometer -15V power supply

图 3/ Figure 3

第4章 产品的安全指南
CHAPTER 4 PRODUCT SAFETY GUIDE

用户安装和运行这个扫描头之前请认真细读这个操作说明书。如果对本说明书有什么问题或者有什么疑惑请联系深圳市大族思特科技有限公司。

Please read this operating manual carefully before installing and operating this scan head. If you have any questions or doubts about this manual, please contact Shenzhen Han's Scanner S&T CO., Ltd.

4.1操作安全 Operational safety

为了降低危险发生的可能性，请用户遵循以下指示：
- 在装配和操作扫描头时不要直视激光束或者它的偏射光，并让身体远离激光束不要和激光接触
- 当扫描头和光学器件一起使用的时候偏离的辐射光对人的损害将会增加
- 检查扫描头之前必须关闭激光和扫描头电源
- 激光束经过的通道必须密封掩盖住以防止激光向外辐射
- 在扫描头运行的时候禁止触摸镜片阻碍镜片的运动。当扫描头运行时，确保镜片不会碰倒被碰到
- 遵循激光安全操作规则
- 保护镜片不受灰尘、潮湿、和腐蚀性气体破坏
- 触摸镜片的时候要戴棉质手套
- 清洁镜片只能用特定的擦镜纸
- 扫描头必须远离强磁场，以避免强磁场损坏电子元件
- 激光光束对眼睛和皮肤有严重的伤害，请务必使用防护眼镜

In order to reduce the possibility of danger, please follow the instructions below:
- Do not look directly into the laser beam or its polarized light when assembling and operating the scan head, and keep your body away from the laser beam. Do not touch the laser.
- Damage to humans due to misaligned radiant light would increase when scan head and optics are used together
- Please do turn off the power of laser and scan head before checking the scan head
- The path through which the laser beam passes must be hermetically sealed to prevent laser radiation
- No touching and no blocking the movement of the lenses while the scan head is running. Also make sure that the lenses does not be touched and knocked over when the scan head is running.
- Follow laser safety rules
- Protects lenses from dust, moisture, and corrosive gases
- Wear cotton gloves when touching lenses
- Use specific lens paper to clean the lens
- Keep the scan head away from strong magnetic fields to avoid damage to the electronic components
- The laser beam has serious damage to eyes and skin, please use protective glasses.

4.2使用安全 Use safety

扫描头是用于反射激光光柱。激光器输出的激光波长须符合这个方头的设计。激光束直径和能量不能超过这个方头所限制的级别。用户应该遵循这个要求来给方头提供合适的输入信号和电源。
- 此扫描头镜片是经过优化设计的，仅仅在激光光束直径为20㎜的设备上使用。假如激光输入光束直径大于20㎜，则会引起扫描头的损坏
- 可以使用的激光波长为1064㎚
- 激光功率密度极限：连续波：1500W/CM2，脉冲：500MW/ CM2（50ns脉宽）
- 激光能量低于250W。如果激光能量高于250W，请与深圳市大族思特科技有限公司联系
- 确定镜片能满足您的使用要求。如果有任何问题，请与深圳市大族思特科技有限公司联系
- 所提供的转接环，仅仅适用于市面上较为通用的场镜。如您使用较为特殊的场镜，请与我们联系
- 扫描头的最大打标范围与场镜有关
- 不要直视激光或者它的偏离光，并让身体尽量远离激光束

The Scan head is used to reflect the laser beam. The wavelength output from the laser must meet the design of this scan head, the laser beam diameter and power should not exceed the limit of this scan head. Users should follow the below requirements to provide the scan head with the appropriate input signal and power supply.
- The mirror in the scan head is optimized to use only on device with 20mm laser beam. It will cause damage to the scan head if the input beam is greater than 20mm.
- The laser wavelength that can be used is 1064nm
- Laser power density limit:Continuous Wave: 1500W/CM2, Pulse: 500MW/ CM2 (50ns pulse width).
- The laser power should less than 250W. If want to use it with higher power please contact Shenzhen Han's Scanner S&T CO., Ltd.
- Make sure the mirror meets your usage requirements. Any problem please contact Shenzhen Han's Scanner S&T CO., Ltd.
- The adapter ring provided is only applicable to the general field lens on the market. If you use a special field lens, please contact us.
- The maximum marking range of the scan head is related to the field lens.
- Do not look directly into the laser or its deviation light and keep the body away from the laser beam.

5.1常规检查 Routine inspection

在运行扫描头之前，请进行如下检查：
- 扫描头的技术参数是否能满足使用要求
- 扫描头外部及镜片腔体干净、清洁
- 假如镜片有赃物，请参考5.3第3条方法清洁镜片
- 确定机械和电气连接正确

Before running the scan head, please check as follows:
- Whether the technical parameters of the scan head can meet the use requirements
- Make sure the external scan head and the mirror cavity is clean
- If there is any dirt on the mirror, please clean it refer to 5.3 Article 3 Method
- Make sure the connections of mechanical and electrical are correct

5.2开启 Open

调整从扫描头出来的激光光路时用二级激光。如果还是不行，那就把激光设到最低能量来避免危险的激光辐射。

Use the secondary laser when adjusting the laser path from the scan head. If it does not work then set the laser to the lowest energy to avoid the danger of laser radiation.
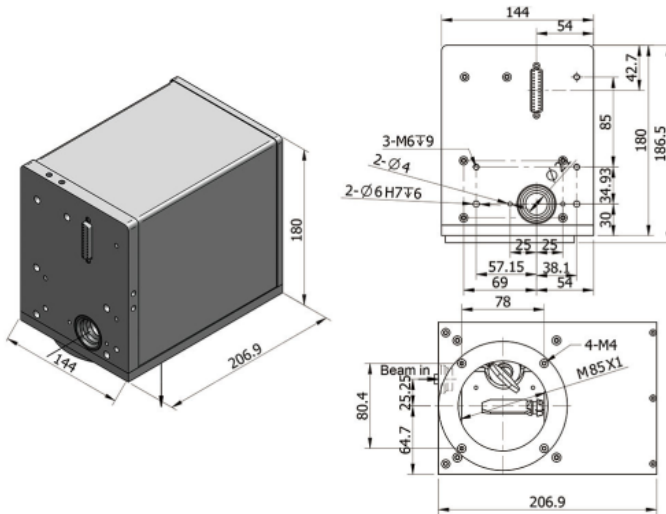
5.3安装步骤 Installation steps

- 1. 撕下入光孔的胶纸，取下防尘盖
- 2. 在安装之前，请先清洁镜片，确保镜片上无油污、灰尘、织物纤维等
- 3. 仔细观察镜片的反射面，如果有灰尘或其它杂物，请用特有的擦镜纸擦拭
   将擦镜纸叠成长条形，捏住擦镜纸的末端。用擦镜纸的前端在镜片上轻轻的拖动，注意不要来回拖动；擦镜纸不得重复再用
- 4. 装上带有转接环的场镜
- 5. 安装扫描头。

- 1.Tear off the adhesive tape on the light hole, remove the dust cover.
- 2.Before installation, please clean the mirror to ensure that the it is free of oil, dust, fabric fibers, etc. Observe the reflective surface of the mirror carefully, and wipe it with a special lens paper if there is dust or other debris.
- 3.Stack the lens paper into strips and pinch the end of the lens paper, use the front end of the paper to gently move on the mirror, be careful not to drag back and forth; the lens paper can not be reused.
- 4.Mount field lens that with adapter ring.
- 5.Install the scan head.

举例说明该系列20mm光斑激光扫描头的2种系列规格：SCAN(1064nm)PSXA101A和SCAN(1064nm)PSXD101A，扫描头的颜色可以根据客户的需求定制。

2 models of this 20mm aperture scan head series: SCAN(1064nm)PSXA101A and SCAN(1064nm)PSXD101A, the appearance color of scan head can be customized.

SCAN(1064nm)PMXD205A**的尺寸如图：**
SCAN(1064nm)PMXD205A size drawing:

UltraScan /ExtraScan 20mm

5.4安装过程 Installation process

● 1. 请确保机器上的连接件与扫描头相匹配
● 2. 将扫描头与您机器对好位置，并插上定位销进行精确定位
● 3. 固定好连接螺钉

● 1.Make sure that the connectors on the machine match with the scan head.
● 2.Position the scan head with your machine and insert the positioning pin for precise positioning.
● 3.Fix the connecting screw.

- 小心地把扫描头从包装中拆出来
- 保存好包装以便以后返修的时候可以再次利用
- 检查所有配件是否已经包含在里面

这个产品是为波长为1064nm，最大激光束直径为20mm而设计。扫描头里面包含了固定方头、装有镜片的X、Y振镜、两块驱动板及一块DA板。

- 1.Make sure that the connectors on the machine match with the scan head.
- 2.Position the scan head with your machine and insert the positioning pin for precise positioning.
- 3.Fix the connecting screw.

This product is designed for 1064nm and maximum diameter of20mm laser beam. The scan head contains a housing, X and Y axis galvanometer with mirror, two driver boards and a DA board.

第7章 产品的维修与维护
CHAPTER 7 PRODUCT MAINTENANCE AND REPAIR

7.1维修 Repair

这个扫描头的所有部件的维修和维护必须由深圳市大族思特科技有限公司执行，只有深圳市大族思特科技有限公司有正确的测试标准和校正系统。

The repair and maintenance of all parts of this scanner head must be performed by Shenzhen Han's Scanner S&T CO., Ltd. Only Shenzhen Han's Scanner S&T CO., Ltd. has the correct test standards and correction system.

7.2维护 Repair

需定期进行反射镜的清洁，因为表面不干净的反射镜会吸收激光的能量，而且会干扰反射镜。定期检查反射镜，如果发现镜片脏了按以下方法清洁镜片。
手戴棉手套握住镜片的边缘并使光学发射面向上，用洁净的压缩空气吹镜面除掉灰尘等脏污
对于存储、使用、服务，请确保满足如下条件：

- 存储温度:−35℃ 至+60℃
- 使用温度：25℃ ±10℃
- 避免潮湿或腐蚀

The mirrors need to be regularly cleaned because the dirty mirrors would absorb the laser energy and interfere with the mirrors. Check the mirrors regularly, if they are dirty clean the mirrors as follows.

Wearing a cotton glove, hold the edge of the mirrors, keep the optical emission surface face up and use clean compressed air to blow the mirrors to remove dust, dirt, etc.

For storage, use, and service, please make sure:

- Storage temperature: -35°C to +60°C
- Use temperature: 25°C ±10°C
- Avoid damp or corrosion

7.3故障检修 Troubleshooting

　　如果操作设备的时候出现了问题，首先检查一下是否有严格按照操作指示操作，然后再对照以下表格来排除并解决问题。如果还是不能解决问题，请联系深圳市大族思特科技有限公司的客服。

Any problem when operating the equipment, first check whether the operation instructions are strictly followed, and then use the following table to eliminate and solve the problem. If you cannot solve the problem, please contact the customer service of Shenzhen Han's Scanner S&T CO., Ltd.

第8章　产品的技术参数说明
CHAPTER 8 PRODUCT TECHNICAL PARAMETERS

本操作使用说明书适用于以下系列产品
This operation instruction manual applies to the following series of products

光斑尺寸 Aperture	波长 Wavelength	驱动板模式 Driver board mode	接口协议 Interface Protocol	规格系列 Model Series
20mm	355nm			
20mm	532nm	A/D （A:模拟驱动模式； D:全数字驱动模式） (A: Analog drive mode; D: all-digital drive mode)	X/S (X: XY2-100协议 S: SPI协议) (X: XY2-100 Protocol S: SPI Protocol)	SCAN+(波长)+P/E+S+协议+驱动板模式+序列号 SCAN + (wavelength) + P/E+S + Protocol + Driver board mode + Serial number
20mm	1064nm			
20mm	10.6um			

技术参数说明
Technical Parameters

分类 Classification	项目名称 Project name	波长Wavelength(355nm/532nm/1064nm/10.6um)	
		光电系列(UltraScan series)	光栅系列(ExtraScan series)
产品规格： Specifications	孔径Aperture：	20mm	20mm
	光柱偏移Beam displacement：	21.13mm	21.13mm
	动态跟踪误差： Dynamic tracking error	0.45ms （负载为20mm光斑镜片mirror with 20mm load）	0.3ms （负载为20mm光斑镜片mirror with 20mm load）
	激光束的最大直径： Laser beam max diameter	20mm	20mm
	电源Power supply：	±15V DC	±15V DC
典型速度 Typical speed	标记速度Marking speed：	0.8m/s	0.8m/s
	跳转速度Positioning speed：	5.0m/s	5.0m/s
光学性能 Optical performance	扫描范围Scanning Range：	110mm*110mm	110mm*110mm
	增益误差Gain error：	＜5mrad	＜5mrad
	零位误差Zero offset：	＜5mrad	＜5mrad
	非线性度Nonlinearity：	＜0.4mrad	＜0.1mrad
动态性能 Dynamic performance	重复精度Repeatability：	＜2μrad	＜1μrad
	最大增益漂移： Max gain drift	＜80ppm/K	＜8ppm/K
	最大零位漂移： Max offset drift	＜15μrad/K	＜15μrad/K
	8 小时长期老化漂移： 8 Hours long-term aging drift	＜0.3mrad	≤0.2 mrad
接口协议 Interface Protocol	电压Voltage：	±5V	±5V
	数字接口协议： Digital Interface	XY2-100/SPI	XY2-100/SPI
使用/存储 温度 Temperature	使用温度Operating temperature：	25℃±10℃	25℃±10℃
	存储温度Storage temperature：	-35℃～ +60℃	-35℃～ +60℃