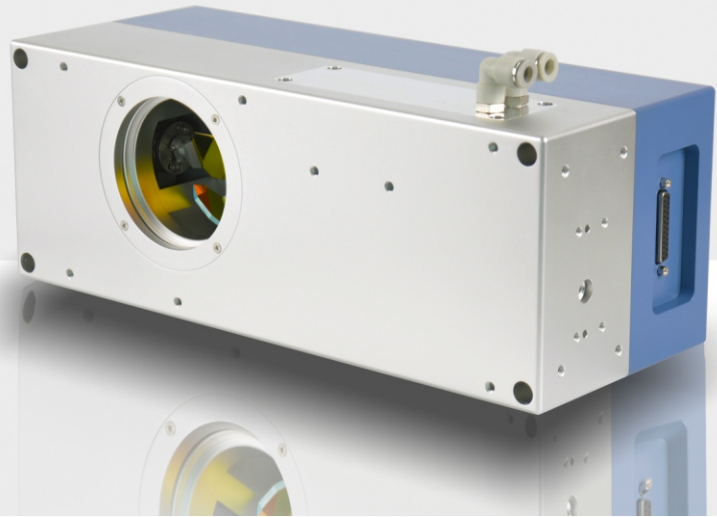


3D Pre-Scanning Solution



3D Pre-Scanning Solution Specifications

This solution includes a 2D galvoscaner system Quantum, a dynamic focus unit Proton series, and a galvo system controller. It use the Pre-scanning technology to realize the large field and 3D laser application.

前聚焦3D扫描系统

该解决方案包含 Quantum 二维扫描振镜系统，Proton 动态聚焦单元及专用控制软件。使用前聚焦技术，能够实现多尺寸规格大幅面及立体标记应用，该系统优点：标记速度快、峰值能量高、聚焦光斑小、功率损耗小。

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3D Pre-Scanning Solution Specifications

前聚焦3D扫描系统 规格参数

二维扫描振镜请参照 Quantum Neutron 规格书

2D galvo reference to Quantum Neutron datasheet.

通用规格 General specifications

额定电源容量 Power requirements	±15V DC150W . RMS max 3A
工作温度 Operating temperature	25±10°C
标准扫描角度 Typical scan angle	40 degree
接口协议 Interface	XY2-100

重量 Weight(kg)

QP10/QP12	QP14/NP14	QP20/NP20	QP30/NP30	QP50EH/NP50EDH
approx.4.2/4.2	5.35/5.55	10.85/11	13.65/14.55	21

关于3D系统的输入光束直径:

根据3D前聚焦振镜系统的具体型号来确认系统的输入光束直径, 可按照如下

公式来计算:

$$\Phi \approx \frac{A}{F}$$

Φ: 输入光束直径

A: 2D振镜部分的最大通光孔径

F: QP/NP 3D振镜的光束放大倍率

以型号 QP30-TF360-10600为例子, 2D振镜镜片孔径为30mm. 系统的光束变倍比为360/100=3.6. 则系统输入直径约为30/3.6 约为8.3mm. 考虑光路准直误差及杂散光因素, 推荐入射光束直径在此基础上减小0.5mm. 最后的推荐系统入射光束直径为7.8mm

动态聚焦轴 规格参数 Specifications for dynamic focus unit

镜头最大行程 Maximum lens travel	±1.5mm
追踪时间 Tracking error time	1ms
典型移动速度 Typical travel speed	≤140mm/s
可重复性 Repeatability	<1um
长期漂移 Long-term drift	<6um

About the diameter of the input beam.

The calculation of the diameter of the input beam depends on the exact system type of the QP/NP. Roughly its formula is as follows.

$$\Phi \approx \frac{A}{F}$$

Φ: Input diameter of the QP/NP series

A: 2D aperture of the QP/NP series

F: QP/NP beam expansion factor

Take model QP/NP30-TF360-10600 as an example. The two-dimensional aperture is 30mm and the beam expansion factor is 3.6. The calculation method is as follows.

$$\Phi \approx \frac{A}{F} = \frac{30}{3.6} = 8.3\text{mm}$$

Considering the halo and collimation of the laser beam, we recommend 8.3-0.5=7.8mm as the diameter of the input laser beam.

Co2激光器 (λ=10600nm): QP20/NP20D/QP30/NP30D/QP50EH/NP50EDH 配置实例

工作范围 Working dimension(mm)	200x200	400x400	600x600	800x800	1000x1000	1200x1200	1400x1400
光斑直径 Spot diameter(um) ⁽¹⁾							
QP20/NP20D	336	603	869	1136	-	-	-
QP30/NP30D	-	420	598	775	953	-	-
QP50EH/NP50EDH	-	-	372	478	585	691	798
工作距离 Working distance(mm) ⁽²⁾							
QP20/NP20D	228	502	777	1052	-	-	-
QP30/NP30D	-	502	777	1052	1327	-	-
QP50EH/NP50EDH	-	-	757	1032	1307	1581	1856
分辨率 Resolution(um)	3	6	9	12	15	18	21



3D Pre-Scanning Solution Specifications

前聚焦3D扫描系统 规格参数

Nd:YAG 激光器 ($\lambda = 1064\text{nm}$) QP20/NP20D/QP30/NP30D/QP50EH/NP50EDH 配置实例

工作范围 Working dimension(mm)	200x200	400x400	600x600	800x800	1000x1000	1200x1200	1400x1400
光斑直径 Spot diameter(μm) ⁽¹⁾							
QP20/NP20D	34	61	87	-	-	-	-
QP30/NP30D	-	42	60	78	96	-	-
QP50EH/NP50EDH	-	-	37	48	59	69	80
工作距离 Working distance(mm) ⁽²⁾							
QP20/NP20D	228	502	777	-	-	-	-
QP30/NP30D	-	502	777	1052	-	-	-
QP50EH/NP50EDH	-	-	757	1032	1307	1581	1856
分辨率 Resolution(μm)	3	6	9	12	15	18	21

QP14/NP14D 配置实例: ($\lambda = 355/532/1064\text{nm}$)

工作范围 Working dimension(mm)	200x200	300x300	400x400	500x500	600x600	
光斑直径 Spot diameter (μm) ⁽¹⁾						
$\lambda = 355\text{nm}$		16	23	29	36	42
$\lambda = 532\text{nm}$		25	34	44	53	63
$\lambda = 1064\text{nm}$		50	68	88	106	126
工作距离 Working distance(mm) ⁽²⁾	247	385	522	660	797	
分辨率 Resolution(μm)	3	4.6	6	7.6	9	

1. 上述资料如有更改, 将不作另行通知 The above information is subject to change without notice 03/2023

2. 以上参数均为理论值 All of the above parameters are theoretical values.

(1) 实际光斑尺寸和写入速度取决于材料及应用, 输入光束质量 $M^2=1$

Actual spot size and writing speed are dependent on material and application, input beam quality $M^2=1$

(2) 扫描振镜下沿到工作平面的距离。该距离取决于产品型号, 并随着激光发散角和物镜公差而有所不同

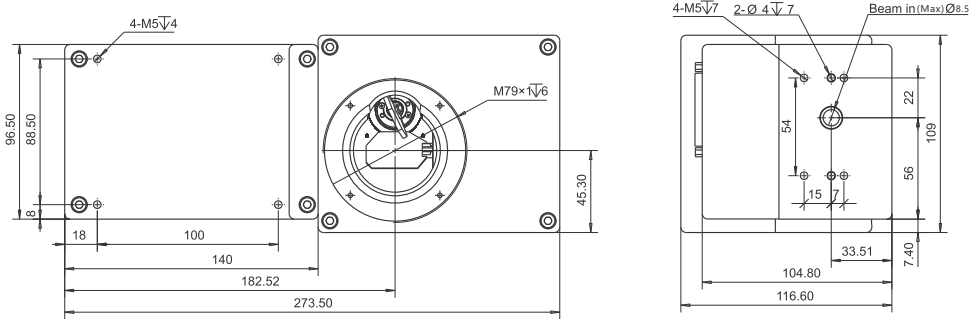
Distance between edge of deflection unit and working surface. This distance is dependent on the product model and will vary with laser divergence and objective tolerance.



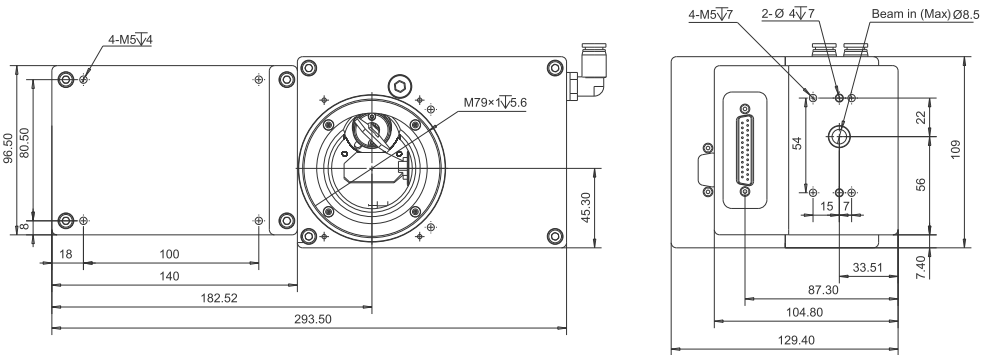
3D Pre-Scanning Solution Mechanical Drawings

前聚焦3D扫描系统 机械图纸

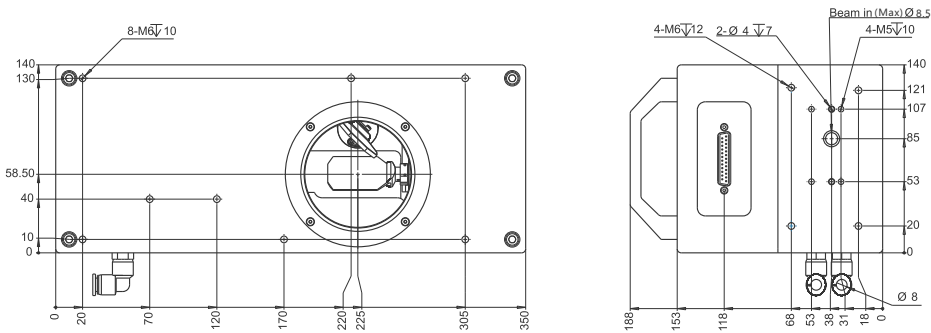
QP14



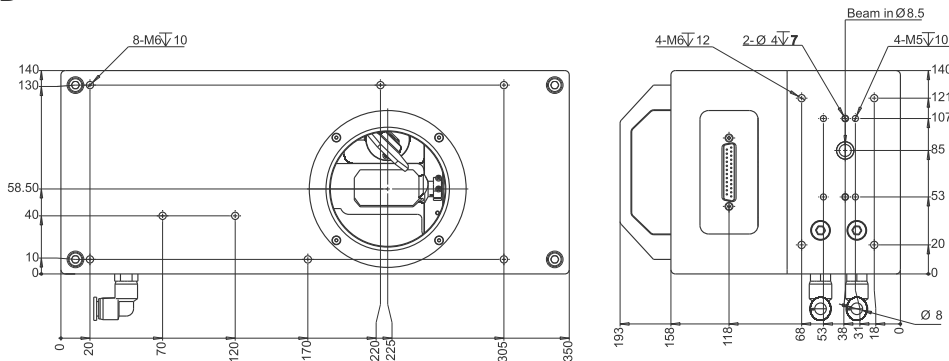
NP14



QP20



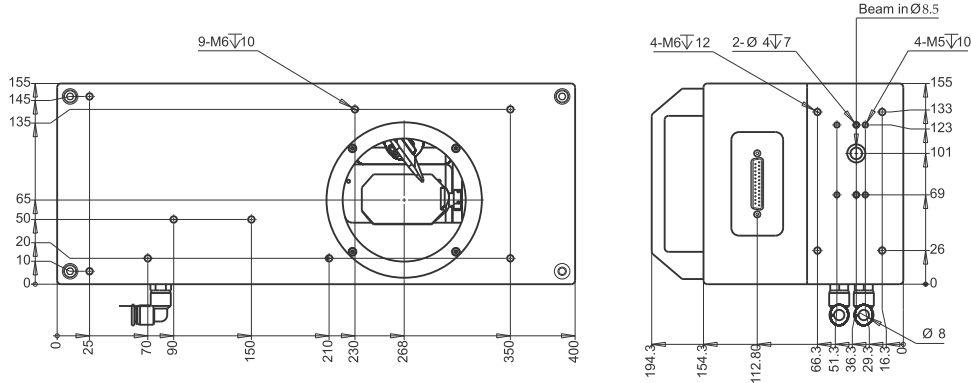
QP20-A/NP20D



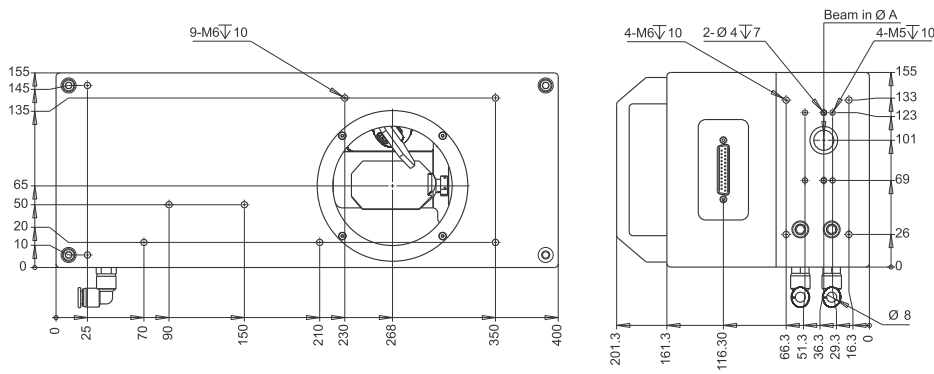
3D Pre-Scanning Solution Mechanical Drawings

前聚焦3D扫描系统 机械图纸

QP30

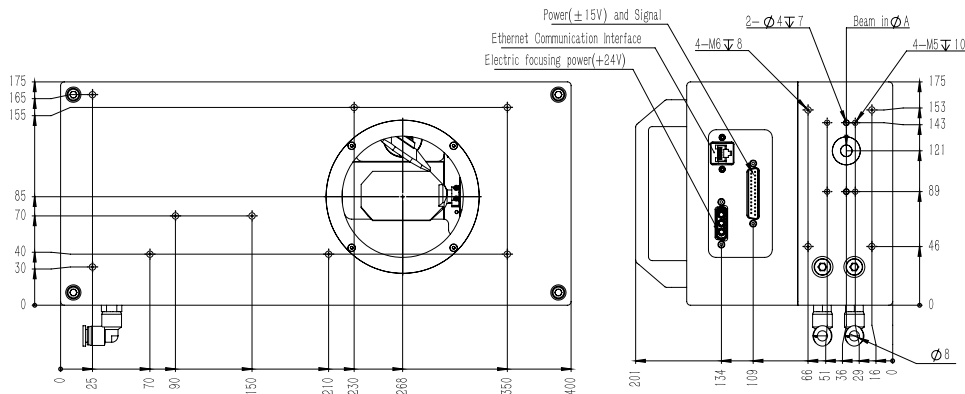


QP30-A/QP30H/QP30H-A/NP30D/NP30DH

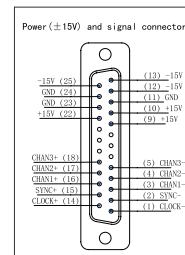
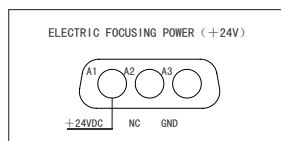


产品型号	A (mm)
QP30-A/NP30D	8.5
QP30H/NP30DH	16

QP30EH/NP30EDH



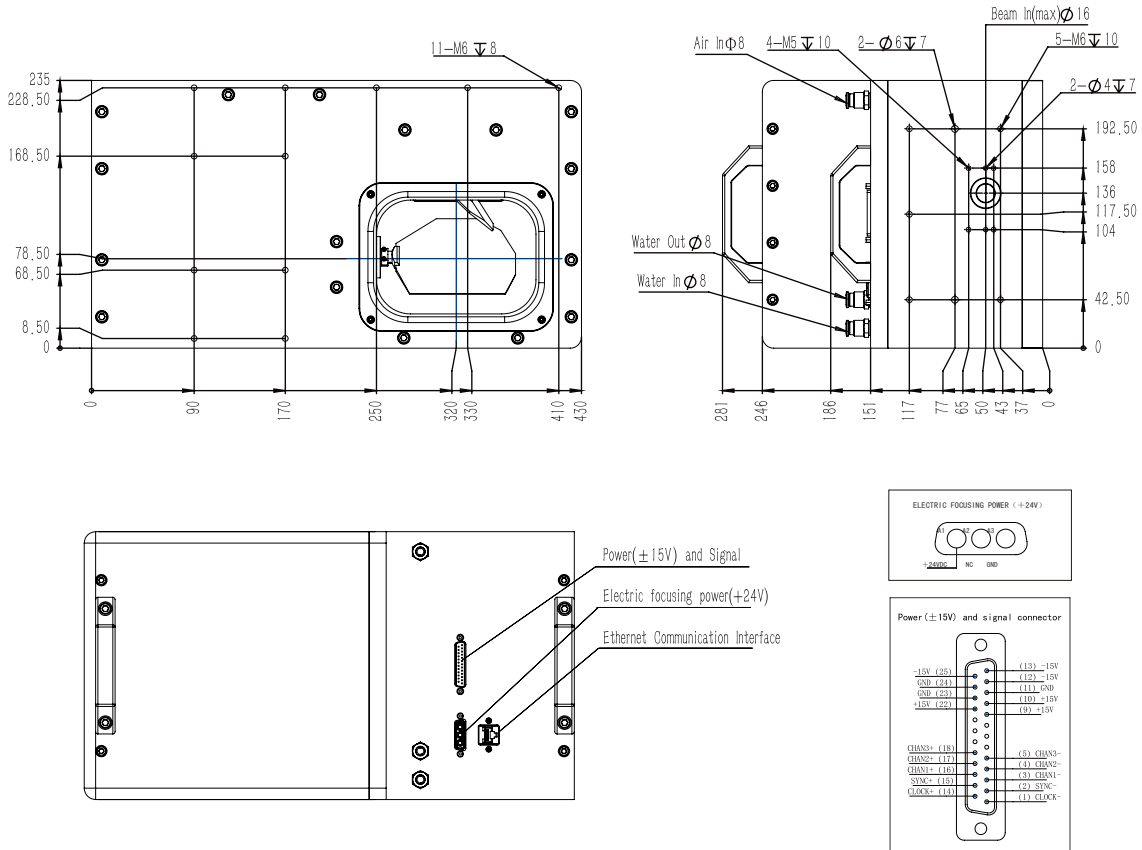
产品型号	A (mm)
QP30EH-TF320/NP30EDH-TF320	9
QP30EH-TF200/NP30EDH-TF200	16
QP30EH-TF195/NP30EDH-TF195	16



3D Pre-Scanning Solution Mechanical Drawings

前聚焦3D扫描系统 机械图纸

QP50EH/NP50EDH



注：具体尺寸以实际为准，鞍山精准有权对图纸进行变更。上述资料如有更改，将不做另行通知04/2024

Specific size is in accordant with the final product, Anshan precise have the right to make the change of the drawing. The above information is subject to change without notice04/2024

