

安装 Installation

相机适配器安装在二维扫描振镜的入光面和激光器安装板之间，通过转接板进行连接（见图一）。

The camera adapter is mounted between the scan head's beam entrance and the laser flange (see Fig 1).

工作原理 Working principle

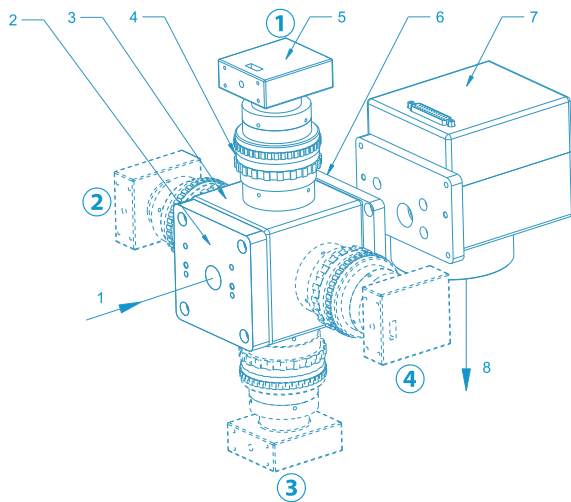
环境光从工件表面反射后经过消色差场镜、二维扫描振镜系统、分束镜、CCD镜头后到达CCD感光元件。调节分束镜位置补偿机械加工的误差及安装误差，保证激光光路与反射光路同轴，实现激光加工位置与CCD影像的检测点重合。

Illumination light reflected from the surface of the workpiece pass through achromatic F-theta, galvo scanner, beam splitter, CCD lens to reach the CCD sensor.

Adjust beam splitter position to compensate the error of machining and assembly to ensure the optical path of the laser and reflected light coaxial. Make the laser coincides with the CCD image detection point.

其他参数 Other parameters

质量 (不包括CCD相机) Weight (without camera)	≈ 2.6 Kg
CCD靶面尺寸 Max. Chip size	1/2"
工作温度 Operating temperature	25°C ± 10°C
激光透过率 Laser transmittivity	95%



图一 Fig 1

注释:

- | | |
|--|--|
| 1 入射光束 Entering beam | 5 CCD相机 CCD camera |
| 2 相机适配器光束入射面 Beam-entrance side camera adapter | 6 相机适配器光束出射面 Beam-exit side camera adapter |
| 3 相机适配器 Camera adapter | 7 扫描振镜 Scan head |
| 4 CCD镜头部分 CCD objective | 8 出射光束 Exit beam |

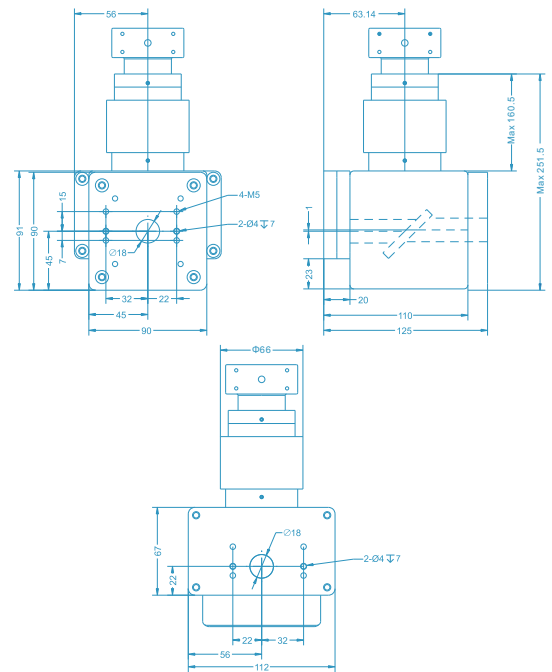
视野范围 FOV

视野范围由场镜焦距、CCD镜头、CCD相机感光元件的尺寸共同决定。以160mm场镜、135mm CCD镜头、CCD靶面尺寸为1/2" (6.4mm*4.8mm)为例，视野范围是20.4mm*15.3mm (如下表)。

Field of view is decided by the lens focal length, CCD camera, CCD camera photosensitive element size together. For example, 160mm lens, CCD camera focus is 135mm, CCD target surface size of 1/2" (6.4mm*4.8mm), the field of view is 20.4mm*15.3mm (see table)

激光波长 Laser wavelength	1064nm	532nm	355nm
照明波长 Illumination wavelength	635nm	635nm	635nm
Diameter of entering beam	16mm	16mm	16mm
反射镜反射波长 Scan head mirror coating	1064nm+635nm	532nm+635nm	355nm+635nm
透射波长/反射波长 Laser wavelength/observation wavelength	1064nm/635nm	532nm/635nm	355nm/635nm
CCD镜头焦距 Focal length camera objective	135mm	135mm	135mm
场镜焦距 Flat field objective	100mm	210mm	254mm
CCD靶面尺寸 CCD chip size	160mm	160mm	160mm
相机安装 Camera mount	C	C	C
加工范围 Marking area	60x60mm ²	100x100mm ²	150x150mm ²
视野范围 Observation field size	4.7*3.5mm ²	7.6*5.7mm ²	10*7.5mm ²

机械参数 Mechanical parameters



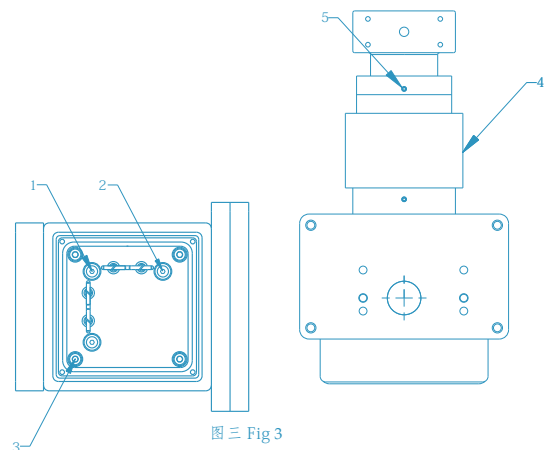
图二 Fig 2

注:所有尺寸都以毫米 (mm) 为单位。All dimensions in mm.

CCD同轴视觉模组分束部分调节方法与步骤 Coaxial CCD adapter tuning method and steps

- 1、调节振镜高度，找到振镜焦点位置。
Adjust the galvanometer height, find the galvanometer focus position.
- 2、控制振镜在加工面打出十字线。
Mark the crosshair.
- 3、顺/逆时针调节调焦环4，至CCD呈现清晰图像。
Adjust the focus ring 4 (CW or CCW), to the camera showing a clear image.
- 4、将镜头锁死。
Locking camera.
- 5、放松螺丝5，顺/逆时针调节镜头，使CCD图像的方向与十字线方向一致。
Loosen screw 5, CW or CCW adjusting camera, to make the orientation of the image the same as the crosshairs.
- 6、锁紧螺丝5。
Lock screw 5.
- 7、观察CCD图像十字中心线与打标十字线的位置，若十字线交点与CCD图像十字中心线不重合需打开保护盖，调节旋钮2、3。调节旋钮2时(见图二)图像中心点会斜着左右移动，调节旋钮3时图像中心点会斜着上下移动。旋钮2、3配合调节使十字线与CCD图像十字中心点重合。
Observe the CCD image crosshair and the marked crosshair position. If the two crosshair does not coincide with each other need to open the protective cover, tuning the knob 2 and knob 3. Take ② (see Figure 2) as an example, when the knob 2 is adjusted, the center of the image will move left and right diagonally. When the knob 3 is adjusted, the center of the image will move up and down diagonally. Tuning knob 2 and 3 to make the image crosshair coincide with the marked crosshair.
- 8、十字线与CCD图像中心点重合之后盖上保护盖。
After tuning restore the cover.

注:上述资料如有更改，将不作另行通知 The above information is subject to change without notice. 12/2019



图三 Fig 3