PHOTONIS
科学级探测器

# 单光子成像
## Dual MCP
# Cricket™²


### 适应单光子成像，高端的像增强器适配器

The Cricket™² 是一个光电耦合的相机配件，可实现单光子成像，适配CMOS/CCD相机并具备极高的曝光时间. The Cricket™² 是基于**双MCP** (微通道板) 像增强器， **可实现单光子灵敏度的一体式摄像机升级**. 通过 C-Mount 接口和USB电源，The Cricket™² 提供了无与伦比的连接标准。

**提供全系列基于Photonis Hi-QE**像增强器，具有市场领先地位的QE（量子效率），覆盖从130nm（UVC）到900nm（NIR）的整个光谱范围.

### Key features

- 双 MCP (Chevron)
- Hi-CE (Collection Efficiency) MCPs
- 高增益 2x10⁶
- 高门控 3ns
- 可提供完整的Hi QE光电阴极系列

### Applications

- 高能物理
- 量子光学
- Optical readout for time projection chambers
- Time correlated single photon imaging
- Contact us for expert advice on your application

### Cricket™² 主要规格

**机械连接**

| | |
|---|---|
| **镜头接口** | c-mount |
| **相机接口** | c-mount |

| | |
|---|---|
| **PSU** | Micro-USb (100 mW @ 5 Volt) |
| **门控(可选)** | SMA Connector (50 Ω)<br>Lemo Connector (0-5V) |
| **集成增益控制** | |

| | |
|---|---|
| **外壳材料** | Aliminium (Black anodized) |
| **外壳(HxWxL)** | 95x58x112 mm |
| **重量** | 450 grams |

**光学性能**

| | |
|---|---|
| **2/3" 芯片格式** | 4:3 aspect ratio |
| **1/1.2" 芯片格式** | 16:10 aspect ratio |
| **agnification** | 1:1 |


**Electronics: PSU, Gating (optional), Gain**


Exploded view of the Cricket™²


Application example: Cricket™² with coupled optics and scientific camera attached

### Cricket™² 型号应用案例

c-mount-in和c-mount-out安装可以轻松耦合各种光学元件、相机和显微镜。可选，c-mount、f-mount适配器

# Cricket™² 像增强器规格

## 像增强器

| | |
|---|---|
| 输出窗口 | 石英或者玻璃 [Fiber/MgF2 可选 Hi- |
| 光电阴极 | QE 范围, SolarBlind or Broadband |
| 微通道板荧光屏类型 | 高分辨率, Hi-CE (Collection efficiency) [HDR可选 ] P43 or P46 |

## 标准门控 (可选)

| | |
|---|---|
| 门控单元 | 集成 |
| 门控 开/关 | 0-5 Volt (TTL) |
| 门控 开/关 时间 (Hi-QE Red) | 30ns |
| 门控 开/关 时间 (其他) | 200ns |
| 门控 重频 | 20 kHz |
| 延时 (门控阴极) | 100 ns |
| 上升时间 | 20 ns |
| 下降时间 | 20 ns |

## 高速门控(可选)

| | |
|---|---|
| 门控单元 | 外部 |
| 门控 开/关 | 0-5 Volt (TTL) |
| 门控 开/关 时间 | 3ns |
| 门控 重频 | 300 kHz |
| 门控 重频 (burst) | 2.5 MHz |
| 延时 (门控阴极) | 100 ns |
| 抖动 | 30 ps RMS |

## 像增强管:

## 基本原理

The IIT is the actual image intensification device embedded in the Cricket™² and is capable of enhancing a low light level up to 2.000.000 times in the case of a double MCP based IIT.

The optical image input is converted to photoelectrons at the Photocathode. The photoelectrons are drawn by an electrical field into the MCP where they impinge multiple times on the inner walls and thereby multiplies several thousands of times.

The electrons then hit the phosphor screen where they are converted back to an optical image.

## Cricket™ 配置正确的IIT

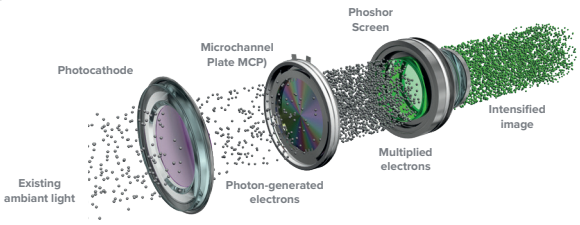
In order to configure the right Cricket™² Image Intensifier Tube matching your application, please consider the following key Image Intensifier parts:

**Photocathode**
Select a photocathode matching the spectral region of interest of the phenomena you want observe. Choose a Photonis SolarBlind, Broadband or Hi-QE photocathodes, and make your camera sensitive in the UV, VIS or NIR (120-900nm).

**Gating**
Choose between the normal gating or fast gating option. A gate unit is integrated in the Cricket™². Repetition rate up to 300 kHz and 2.5 MHz in burst mode.

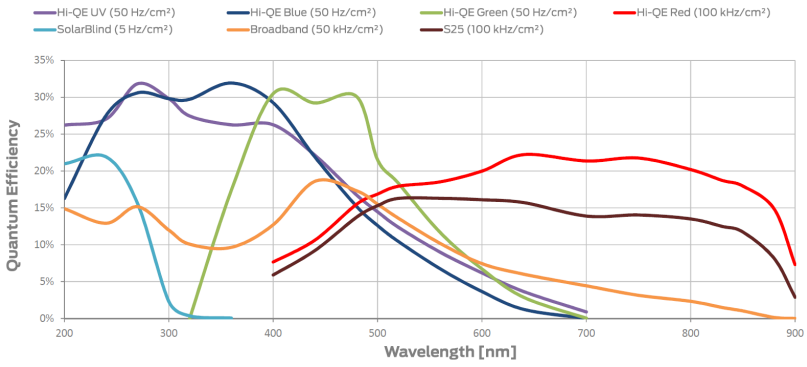
**MCP Type**
The dual MCP (Chevron) setup enables single photon sensitivity thanks to high resolution, Hi-CE MCP's a gain of up to $2x10^6$ can be achieved. Choose the high dynamic range MCP option for high linearity.

**Phosphor**
Depending on imaging speed, choose the P43 phosphor for high efficiency and frame rates up to 1000 frames per second or the P46 phosphor for up to 4000 frames per second.

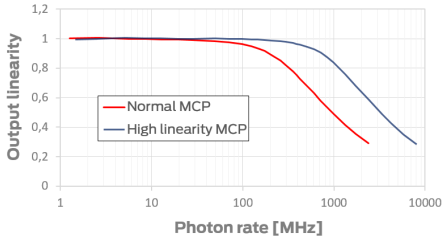



Single MCP illustration

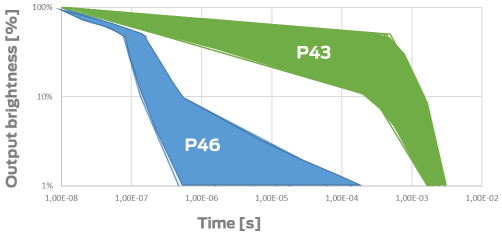
### Photocathode overview




### MCP Linearity




### Phosphor decay





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Doc. Id: GOBS 22-022 January 2022