

# Dhyana 4040 V2

The Dhyana 4040 V2 brings the speed and dynamic range to large format imaging missing from previous CCD technology.<sup>[1]</sup> With a 52 mm diameter, high quantum efficiency and 9-micron pixels size, it is well suited to scientific applications in areas such as Astronomy and Physics.



## Key Features

### 4040 V2

Field of View	36.9 mm x 36.9 mm
Quantum Efficiency	74 % QE
Frame Rate	16.5 fps
Full-well Capacity	70 ke-
Cooling Method	Air & Liquid

## Benefits

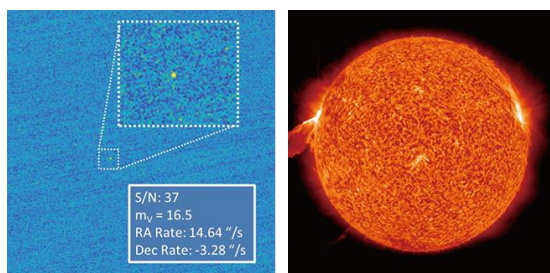
- Large field of view from 16 MP, 9 μm pixel size sensor.
- High photon collection efficiency for lower illumination intensity.
- Faster data rates than the previous CCD technology.
- High dynamic range for the measurement of bright and dim signals at the same time.
- Maintains low dark noise, minimizes vibration, and aids thermal stability.

## Typical Applications

- Space Debris Detection
- Solar Astronomy
- X-ray Detection
- Quantum Optics

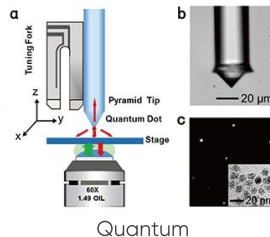
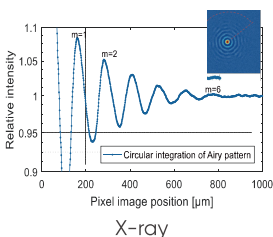
## Noted Examples

[1] Large sCMOS technology can be used in a wide range of applications previously limited by CCD technology.

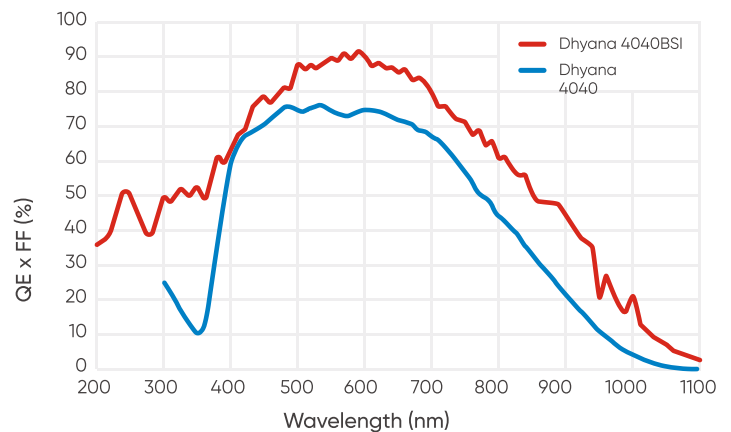


Space Debris

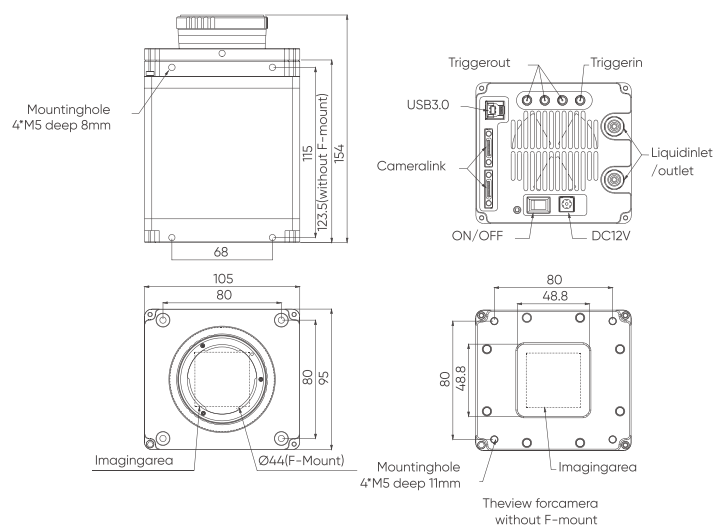
Solar



## Quantum Efficiency



## Dimensions (Unit: mm)



# Specifications

Large Format sCMOS Camera

[www.tucsen.com](http://www.tucsen.com)

型号	Dhyana 4040 V2
芯片类型	FSI sCMOS
芯片型号	Gpixel GSENSE4040
峰值量子效率	74 % @ 600 nm
彩色 / 黑白	黑白
对角线尺寸	52.1 mm
有效面积	36.9 mm x 36.9 mm
分辨率	4096 (H) x 4096 (V)
像素大小	9 $\mu\text{m}$ x 9 $\mu\text{m}$
满阱容量	典型值: 70 ke-
动态范围	典型值: 86 dB
帧率	16.5 fps @ CameraLink, 9.7 fps @ USB 3.0
读出噪声	典型值: 3.6 e-
快门类型	卷帘
曝光时间	10 $\mu\text{s}$ ~ 3600 s
暗信号不均匀性	0.5 e-
光响应不均匀性	0.2%
制冷方式	风冷, 水冷
最大制冷温度	低于环境温度 45 °C (水冷)
暗电流	风冷: 0.15 e-/pixel/s, 水冷: 0.1 e-/pixel/s
Binning	2 x 2, 4 x 4
ROI	支持
时间戳精度	1 $\mu\text{s}$ accuracy
GPS时间戳	8 ns accuracy
触发模式	硬件, 软件
触发输出	曝光开始, 全局, 读出结束, 高电平, 低电平
触发接口	SMA, CameraLink CC1接口触发
数据接口	USB 3.0, CameraLink
位深	12 bit, 16 bit
光学接口	F-Mount / 用户可定制
电源	12 V / 8 A
功耗	< 45 W
相机尺寸	105 mm x 95 mm x 123.5 mm
重量	2 kg
软件	Mosaic 3.0, SamplePro, MAXIMDL, LabVIEW, MATLAB
SDK	C, C++, C#, Python
操作系统	Windows, Linux
操作环境	工作: 温度 -25~45 °C, 湿度 0~95% 储存: 温度 -35~60 °C, 湿度 0~95%