

The GPIXEL GLUX9701BSI sensor

Is a UV camera with the GLUX9701BSI backilluminated sensor not only suitable for the UV spectrum, but also in the near infrared due to its high sensitivity, and suitable as a night vision camera?

1. The principle of backside exposure (BSI)

In conventional sensors (front-illuminated), the conductor tracks lie above the light-sensitive layer and block short-wave UV light in particular. In the **BSI** (back-illuminated) process, the silicon wafer is turned upside down and thinned from the back.

- **The effect:** The light hits the photodiodes directly. This massively increases quantum efficiency (QE) – not only in UV, but over the entire spectrum from approx. 200 nm to 1100 nm.

2. Near-infrared (NIR) suitability

Silicon has a natural sensitivity of up to about 1100 nm. Since the GLUX9701BSI is trimmed for high luminous efficacy, it often has a significantly higher sensitivity in the NIR range (700–1000 nm) than standard consumer sensors.

- **Advantage:** It can capture infrared illumination (e.g. 850 nm or 940 nm lasers/LEDs) that is invisible to the human eye.

3. Use as a night vision camera

For true night vision ("low-light imaging"), two factors are crucial that this sensor masters:

- **Large pixels:** The GLUX9701 usually has very large pixels (often around 9.5 μm). The larger the pixel, the more photons it can collect. This dramatically improves the signal-to-noise ratio.
- **Low readout noise:** BSI sensors in this class are optimized to deliver clear images even in extremely low light without sinking into "noise".

Summary of Areas of Application

Area	Suitability	Reason
UV (200-400nm)	Amazing	BSI technology prevents absorption by metal layers.

Area	Suitability	Reason
Visible (400-700nm)	Very good	Enormously high color fidelity/brightness (often as a monochrome sensor).
NIR (700-1100nm)	Good to Very Good	Natural silicon sensitivity is fully exploited.
Night Vision	Excellent	Combination of high quantum efficiency and large pixels.

1. SC9701UV-ITR: The Scientific Precision Machine

This camera is **cooled, which** is extremely important **for the question regarding** night vision and NIR.

- **Cooling:** Thermoelectric cooling (TEC) almost completely eliminates thermal noise (dark current).
- **Application:** Ideal for extremely low light sources or UV fluorescence analysis where exposure times of several seconds or minutes are required.
- **Night vision aspect:** It would be the most powerful night vision camera, but is usually too heavy and power-hungry for mobile use due to the cooling.

2. SCA9701-UV-TR: The industrial all-rounder

This is the classic **industrial camera** variant for machine vision.

- **Interfaces:** Usually with robust GigE or USB3 connectors for continuous operation in factories or laboratories.
- **Application:** Surface inspection (e.g. detection of cracks in glass or metal using UV) or monitoring of welding processes (where a lot of UV and IR is generated).
- **Night vision aspect:** In a security environment (stationary), it offers impressive performance at dusk even without active cooling thanks to the high quantum efficiency of the sensor.

3. SC9701UV-ICM: The mobile solution for drones (UAV)

This is probably the most interesting model for your application, as it **is optimized for weight and size**.

- **Design:** Miniaturized and robust to withstand vibrations and temperature fluctuations during flight.
- **UAV advantage:** On a drone, this camera can perform "multispectral flights".
 - **Tag:** Search for corona discharges on high-voltage lines (UV mode).
 - **Night:** Use as a highly sensitive navigation or surveillance camera in the NIR range.
- **Integration:** It's usually easy to integrate into gimbals to deliver stable aerial footage.

Comparison of application scenarios

Model	Form Factor	Cooling	Main advantage
ITR	Large / Heavy	Yes (active)	Maximum sensitivity, no noise.
TR	Compact	Passive	Reliability in 24/7 industrial operation.
ICM	Miniaturized	Passive	Light weight, ideal for drones & mobile use.

