



PENLINK

INTRODUCTION

Advanced Imaging Solutions from Penlink

At Penlink, we pride ourselves on delivering cutting-edge solutions that enables advanced capabilities with robust performance, catering to the needs of OEMs, integrators, and end-users alike.

The Low-Light Camera Cores are engineered to excel in environments with challenging lighting conditions. With high-definition resolution, exceptional sensitivity, and an impressive dynamic range, these camera cores offer unparalleled performance while consuming minimal power. Housed in ruggedized enclosures, they are built to withstand the rigors of aerial, mobile, and handheld surveillance systems, making them indispensable tools for applications where reliability and durability are of utmost importance.

Furthermore, the compact size of the Low-Light Camera Cores makes them an ideal choice for integration into various platforms, including weapon sights, helmet displays, and monoculars. Whether deployed in military

operations, law enforcement, or search and rescue missions, these camera cores deliver uncompromising performance, meeting stringent size, weight, and power requirements without sacrificing image quality or sensitivity.

The Intensified Cameras represent a fusion of cutting-edge technologies, combining CMOS sensors with image intensifier tubes to deliver ultra-sensitive imaging capabilities under low-light conditions. With high resolution, fast frame rates, and a compact design, these cameras are tailored for applications demanding the utmost sensitivity and precision, such as industrial inspection, scientific research, and environmental monitoring.

E-mail: info@penlink.se

Phone: +46 (0) 8 401 10 10

APPLICATIONS

Industries Served

Penlink caters to a diverse array of industries with its advanced imaging solutions. From enhancing border security through state-of-the-art surveillance to enabling precise cellular analysis, the advanced imaging technology redefine the boundaries of possibility.

Whether it involves equipping soldiers with portable imaging gear, advancing medical diagnostics, or optimizing industrial processes with machine vision systems, Penlink stands at the forefront of technological progress. Some of our most common applications include:

Life Science & Environment

- Scientific instrumentation
- Agriculture observation & monitoring
- Medical imaging, incl. ophthalmology
- Space exploration
- Aquaculture
- Gas detection
- Waste management
- Cell analysis



Defense & Surveillance

- Portable equipment for soldiers
- Armored vehicles & platform sights
- Search & rescue operations
- Law enforcement & police applications
- Traffic management systems
- Border & infrastructure surveillance
- Maritime surveillance

Industrial Control

- Machine vision systems
- Power grid maintenance
- Material analysis
- Beam profile analysis
- Train and vehicle inspection
- Combustion flow analysis
- Situation awareness



CAMERA SOLUTIONS

Advanced Image Technology

From Ultraviolet (UV) to Visible/Near Infrared (VNIR) technologies, and Thermal Vision, Penlink's advanced imaging portfolio caters to a wide spectrum of applications across various industries including defense, surveillance, industrial, life science, and environmental monitoring.

KEY TECHNOLOGIES

UV Imaging Technology

The UV imaging technology operates within the 200 nm to 400 nm wavelength range, revealing hidden phenomena beyond human vision. With highly sensitive sensors, our solutions are used in applications like corona discharge detection, power grid maintenance, and fluorescence microscopy.

Capable of detecting signals from UV to red wavelengths, the UV cameras offer versatility. Moreover, our specialized solar-blind option ensures precise UV detection without interference from other wavelengths.

Visible - Near Infrared

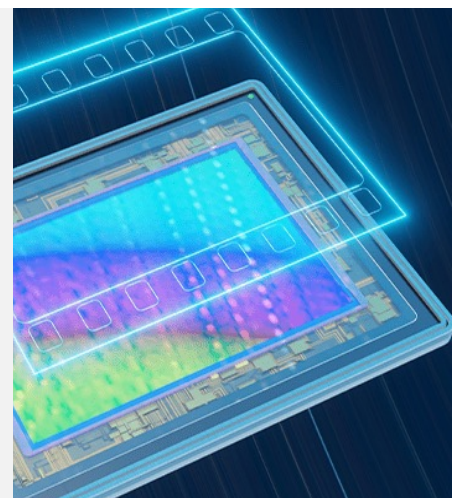
The low-light camera cores boast HD resolution, high sensitivity, and dynamic range while consuming minimal power and housed in ruggedized enclosures. Their compact size makes them ideal for integration into aerial, mobile, and handheld surveillance systems, meeting size, weight, and power requirements. They are optimized for man-portable applications like weapon sights, helmet displays, and monoculars.

The Intensified cameras merge CMOS sensors with image intensifier tubes for ultra-sensitive imaging in low-light conditions. Featuring high resolution, frame rates, and compact designs, they are suited for industrial and research markets.

Enhanced Vision Equipment

Penlink offers enhanced vision equipment, an equipment and vision system for surveillance and defense applications. These low light imaging systems are specifically developed with night vision, observation & surveillance, situation awareness in mind.

The TacFusion, a handheld binocular combining low light camera core and thermal imaging sensor. Providing the best image quality, the TacFusion has been used in surveillance applications such as police law-enforcement, borders and infrastructure surveillance and Search and Rescue operations.



PENLINK SOLUTION

iNocturn

The superior intensified camera extracting the best of image intensifier tube and sensitive low light camera. The iNocturn features a unique combination of ultra-sensitivity, high framerate, high-QE photodetectors, and nano-second gating.

The iNocturn represents the pinnacle of intensified camera technology, seamlessly integrating image intensifier tubes with low-light cameras. Renowned for its sensitivity, high frame rates, and nano-second gating, it sets new standards in imaging. Equipped with a high Quantum Efficiency (QE) image intensifier covering deep UV to Near Infrared, it caters to diverse applications.

For instance, the iNocturn SUV excels in spark detection, while the iNocturn Blue/Green is ideal for wafer inspection. Advanced features such as Smart Tube Management, a high-resolution sensor, and a compact, easily integrable design further enhance its capabilities.



The iNocturn covers different ranges of wavelengths from UV to Near Infrared enabling the user to focus on a specific range of wavelength for a particular application.

- Ultra-sensitive
- HI-QE photodetector
- Various wavelength detection
- Flexible output interfaces



TECHNICAL INFORMATION

Camera resolution	1280x1024 pixels
Frame rate	Up to 100fps at full resolution
Spectral response	200 - 1100nm subjected to photocathode choice
Gating options	Gated and non-gated
Minimum detection capability	Up to single photon
Connection	HD-SDI, USB 3.0, Camera Link, PAL/NTSC, LVCMOS
Lens mount	C-mount
Operational temperature	-10 °C to +55 °C

PENLINK SOLUTION

Noctun Serie

The Noctun Series of low light camera cores offer a broad range of video outputs spanning from the smallest configuration for OEMs and integrators to the plug and play with HD video.

The Noctun camera cores use the power of Lynx CMOS and SmartColor sensor for optimized low-light level imaging.

The Noctun Series of low light camera cores provide day-through-night imaging, capturing images in extreme lighting conditions from daylight through starlight condition. Noctun Series is ideal for surveillance, security, and mobile applications such as border patrol, reconnaissance UAVs and armored vehicle perimeter monitoring. Optimized for size, weight and power requirements, the Noctun Series is also a well-suited imaging solution for man-portable uses such as weapon sights, helmet displays, and monocular.

The Noctun Series of low light camera cores are ruggedized, passive, low-light imaging cores that feature high-definition resolution, high sensitivity and high dynamic range with low power consumption.

Powered by the Lynx CMOS sensor or the SmartColor imaging sensor, the Noctun Series provides real-time



imaging capabilities (from daylight to bright starlight scene illumination) in the visible and near infrared spectrum in either monochrome or color. Its small size, low weight and low power usage make this core module ideal for integration into mobile and handheld surveillance systems.

- Ideal for 24/7 operations
- Less than 4e-read-out noise
- 860 nm and 1064 nm laser line detection
- Digital zoom up to 8x
- HD format (1.3 Mpx)
- Up to 100 fps



NOCTURN HD-SDI



NOCTURN XL



NOCTURN XS

TECHNICAL INFORMATION

Sensor	Monochrome and SmartColor CMOS sensor
Frame rate	up to 100 fps
Available Video Output	HDSDI 720p, CameraLink or NTSC/PAL, LVCMOS, USB 3.0
Mounting interface	1/4-20" tripod mount
Lens mount	C-mount
Optical interface	Compatible with 1 inch and 2/3 inch optics

PENLINK SOLUTION

TacFusion

The TacFusion is a versatile handheld binocular supporting broad of applications such as patrolling, law enforcement, search and rescue, drug enforcement, anti-smuggling and suspect capture.

The TacFusion, a high-performance handheld binocular built for professionals in law enforcement, surveillance, and search and rescue operations. This advanced equipment features three-channel mode of observations namely Visible, Thermal and Fusion dedicated for critical night and day operations. With its intuitive control, the TacFusion ensures the users to operate it seamlessly through its advanced features, ensuring swift and precise adjustments in the field.



The TacFusion excels in versatility offering the users an indispensable equipment featured by unmatched performance, durability, and innovative imaging technologies.

- Advanced thermal, clear night vision, and fusion imaging.
- Daylight to starlight observation, sensitive up to 2 mlx.
- Long range detection up to 3 km.
- Remote control via mobile app.

Color Option



**TacFusion
BLUE**



**TacFusion
DESSERT YELLOW**



**TacFusion
GREEN**

**TECHNICAL
INFORMATION**

Visible channel

- Low light CMOS sensor
- HD format 1280x1024 @25fps
- Daylight to starlight observation

Thermal channel

- Uncooled focal plane array
- VGA Format: 640x512 @25fps
- NETD < 40 mK (@25°C, F#=1.0)

Advanced Functions

- High Storage: 32GB
- Remote control via mobile app (Android and iOS)
- Chargeable Li battery operating up to 5 hours

Housing

- Size 164mm × 182.3mm × 73.3mm
- Weight: <1kg
- Operating temperature: -30 °C to 55 °C



PENLINK

CONCLUSION

Advanced Imaging Solutions – Exploring Penlink's Advanced Imaging Solutions

In conclusion, this application note has provided an overview of our advanced imaging technologies, including the Low-Light Camera Cores and Intensified Cameras. Through meticulous engineering and relentless innovation, our supplier has designed and developed solutions that redefine the standards of sensitivity, resolution, and reliability in imaging.

The Low-Light Camera Cores offer high-definition resolution, exceptional sensitivity, and ruggedized designs, making them ideal for deployment in aerial, mobile, and handheld surveillance systems. Their compact size and low power consumption further enhance their versatility.

Similarly, the Intensified Cameras represent a fusion of advanced technologies, delivering ultra-sensitive imaging capabilities under low-light conditions. With high resolution, fast frame rates,

and compact designs, these cameras are perfectly suited for demanding industrial, scientific, and environmental applications.

At Penlink, we remain committed to pushing the boundaries of imaging excellence, empowering our customers to achieve their goals with confidence and precision. Whether you're an OEM, integrator, or end-user, our advanced imaging solutions are designed to meet your most stringent requirements and exceed your expectations.

We invite you to explore our complete range of advanced imaging solutions and discover how Penlink can help you unlock new possibilities in surveillance, industrial inspection, scientific research, and beyond. Contact us today to learn more about our products and discuss how we can tailor our solutions to meet your specific needs. Thank you for choosing Penlink as your trusted partner in advanced imaging technology.

CONTACT INFORMATION

E-mail: info@penlink.se

Phone: +46 (0) 8 401 10 10

Office: Penlink AB, Västberga Allé 5, SE-126 30 Hägersten, Sweden

