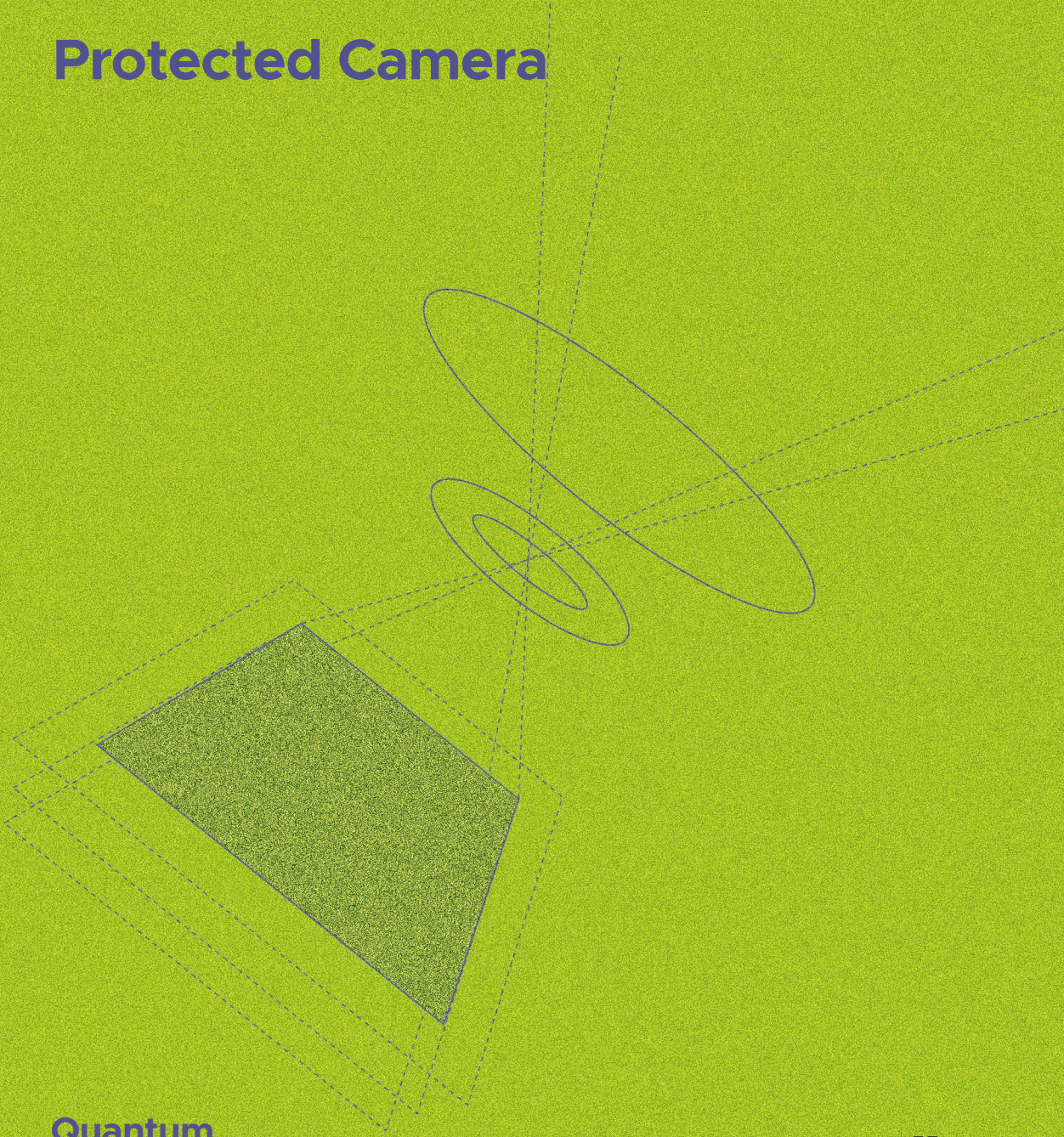


NodeV

# QRNG

Protected Camera



Quantum  
Security

sdt

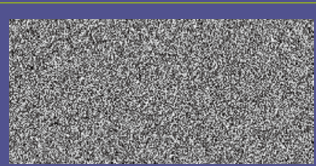
# QRNG

## Quantum Random Number Generator

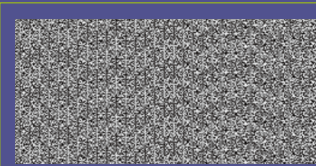
QRNG (Quantum Random Number Generator) harnesses the power of quantum mechanics, using naturally occurring quantum phenomena to generate truly unpredictable, secure random numbers.

### Randomness: The Key to Ensuring Security in Modern Cryptographic Systems

Modern cryptographic systems rely on pseudorandom numbers based on mathematical algorithms. While challenging to crack, these numbers exhibit patterns or cycles, leaving them vulnerable to decryption by the immense computational power of quantum computers. As we enter the era of quantum computing, the need for truly random, completely unpredictable numbers becomes essential to safeguard security.



True Random



Pseudo Random

### Benefits

Protecting Privacy Data

Preventing Cyberattacks

Safeguarding Classified Information

Improving Data Reliability

### Applicable Industries

Military and national security facilities

Power plants

Critical infrastructure

Smart cities

## Overview



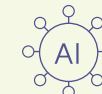
**NodeV** is a state-of-the-art security camera that ensures end-to-end protection, from image capture to data transmission, using quantum random numbers for unmatched security.

Unlike typical QRNG systems that require separate hardware modules or chips, **NodeV** utilizes dark shot noise from its image sensor as the entropy source for generating random numbers, enabling a simpler and more cost-effective solution.

With the ability to securely transmit data to servers or the cloud, **NodeV** seamlessly integrates with machine vision systems for real-time anomaly detection, target identification, and tracking. Powered by SDT's proprietary certified cryptographic module, **NodeV** sets the standard as a next-generation security camera, delivering unparalleled protection for national defense and other critical applications.



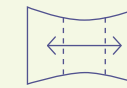
Cloud



AI



Ultra High Definition



Panoramic View

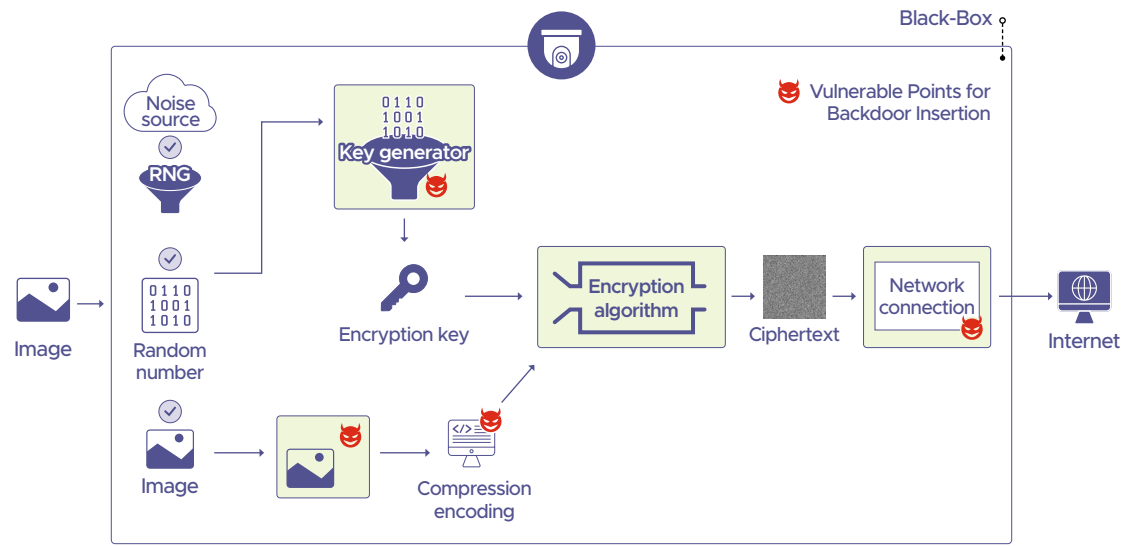


All-Weather Durability

## Specifications

Item	Specifications
Image sensor	1/2.8 CMOS
Lens	5.33-110mm x21 optical zoom , F1.65~3.8
Effective pixels	UHD (3,480 x 2,160 pixels)
Video output / frame	normal 30 fps · wdr 15 fps
Night vision / IR range	Day / Night Automatic IR Cut Filter, IR Range Max. 400mm
View angle	<b>WIDE</b> 66.42(d), 54.26(h), 41.26(v)   <b>TELE</b> 3.3(d), 2.66(h), 2(v)
Rotation angle	360°
Power	12V
Output	RJ45
Water / Dust proof	IP66
Operating temperature	-20 - 50°C

# Why Cameras Need QRNG Technologies



### How security breaches occur with camera systems

- Exploitation of default IDs and passwords: gateway to unauthorized access
- Manipulating encryption algorithms and key generation processes to steal user key information and image data
- Inserting a backdoor while ciphertext traverses network segments, allowing a third party to send and receive hidden messages
- Steganographic concealment using image insertion or the modification of specific pixels within an image

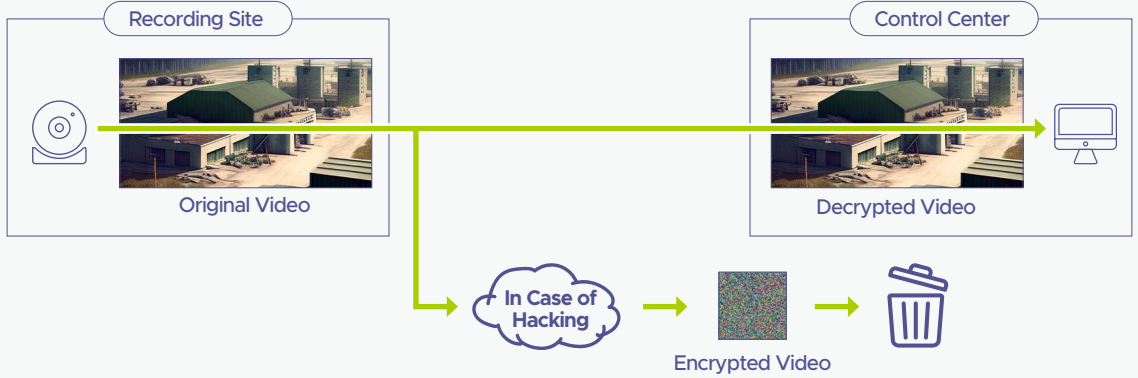
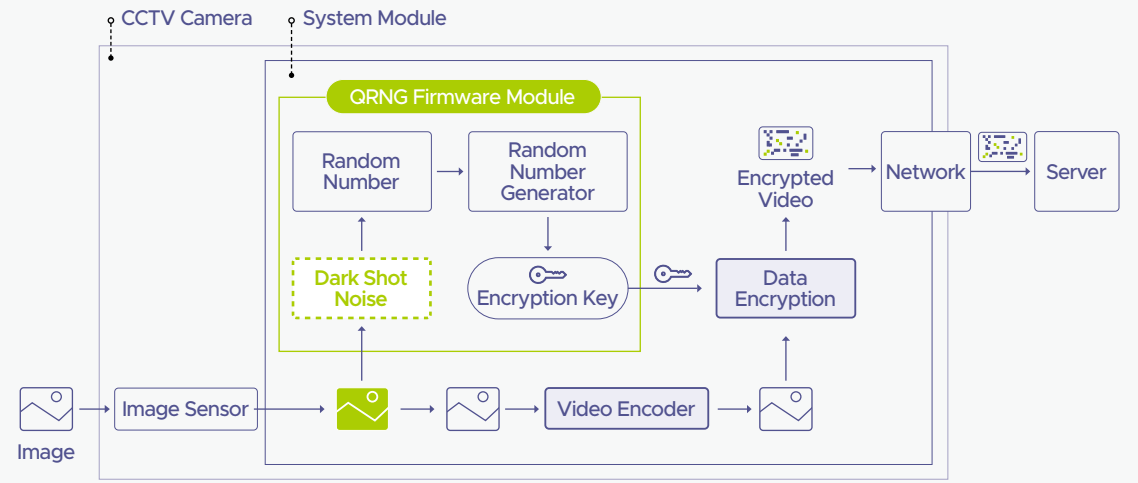
To fundamentally eliminate these security risks, SDT has introduced the NodeV camera, which leverages QRNG technology to provide unmatched protection from the moment the data is created.

# Benefits

NodeQ vs. Standard IP Cameras

	NodeV	Standard IP Cameras
<b>Cryptographic Methods</b>	· Unmatched security powered by QRNG technology	· Conventional encryption techniques that are more vulnerable to hacking
<b>Data Transmission</b>	· Direct, encrypted transmission to the server or cloud, without intermediate steps	· Data transmitted through an NVR, creating intermediate stages that increase vulnerability to hacking
<b>Video Quality</b>	· 4K high-resolution video	· Standard video quality

# NodeV Architecture



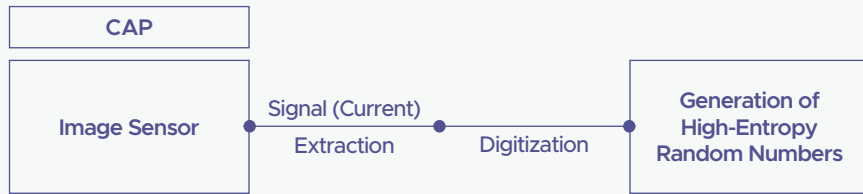
NodeV ensures ultimate security by encrypting video data with quantum random numbers generated directly by the image sensor. From the moment of capture, every frame is safeguarded, granting access exclusively to authorized users. With hacking virtually impossible, even in the rare event of a breach, intercepted footage remains completely unusable to unauthorized parties.

# References

**Military Facilities**  
 Military installations demand secure, real-time monitoring but face constant threats of data interception during transmission. NodeQ eliminates this risk with encryption keys powered by QRNG technology, generating a unique key for every session. This advanced approach blocks repeated attacks and prevents attempts to extract encryption keys, ensuring surveillance footage remains untouchable and tamper-proof against any adversary.

**Semiconductor Manufacturing Plants**  
 Semiconductor manufacturing plants face serious risks of industrial espionage, with traditional cameras often falling short on security. NodeQ goes beyond secure video capture by seamlessly integrating with vision AI solutions to automatically detect critical details, such as safety gear compliance. This advanced technology not only enhances security but also elevates workplace safety standards, providing unparalleled protection and peace of mind.

# QRNG & QKD Ecosystem

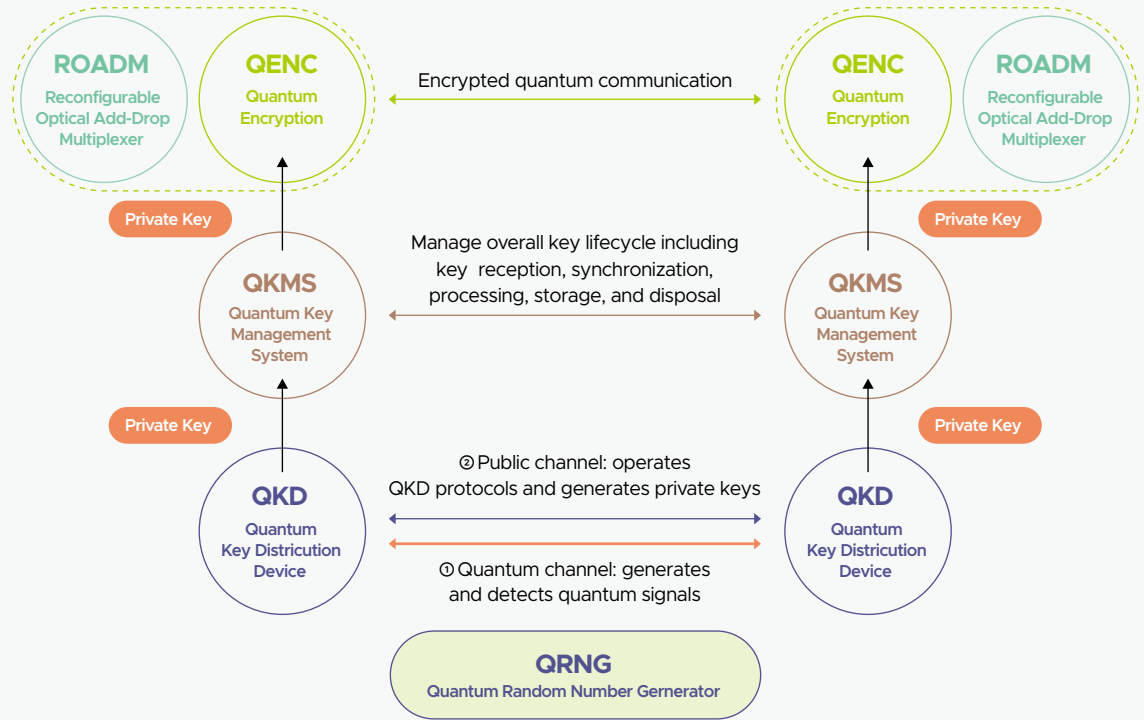


SDT leverages dark shot noise generated by the image sensor as a source of entropy to produce random numbers at a high speed.



The encryption generated through QRNG is securely transmitted via a quantum channel, established between one transmitter and one receiver, using a **QKD (Quantum Key Distribution)** system. These keys are designed for **single-use** only, remaining valid for only a brief period before being discarded and replaced with new quantum keys.

Thanks to the unique quantum properties of **superposition and the impossibility of cloning**, any interception of the key causes the quantum state to collapse, rendering the key obsolete and effectively blocking any eavesdropping attempts.



Unlike conventional 1:1 QKD systems that require installing both a sender and receiver for each new connection, SDT's **1:N QKD** connects one receiver to up to 64 transmitters, enabling the a more scalable and cost-effective quantum cryptography infrastructure.

# Bringing Quantum-Secured Channel to Your Sites

SDT delivers cutting-edge protection and secure transmission of all information using advanced quantum encryption keys, setting the standard in quantum cryptography technology



## Products & Solutions

<p><b>QRNG IP Camera</b> Quantum Communication</p>	<p><b>Quantum Control Devices</b> Quantum Computing</p>	<p><b>Quantum Dot Sensor Camera</b> Quantum Sensing</p>
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<p>SDT's quantum communication protects military and government communications by securely encrypting sensitive data.</p>	<p>SDT's quantum computing solves complex problems faster than classical supercomputers, driving breakthroughs across industries.</p>	<p>SDT's quantum sensing enables high-precision measurements with enhanced sensitivity, advancing safety and scientific research.</p>
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# QRNG Brochure



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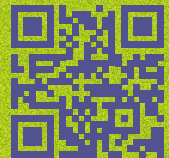
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