



## Surveillance in the Dark

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## Brief

Imagine yourself on a train, in a bus or at a transportation hub, commuting to work, when the lights go out. You know something is wrong as passengers start to panic, but your mode of transportation has little or no resources to inform or to ensure the safety of passengers. Even worse, the vehicle's security command center has no idea who or what has caused the problems due to a lack of visibility within the vehicle's standard network surveillance system.

Now imagine that the same vehicle is fitted with the latest thermal imaging cameras, transportation embedded computer controller and network video management software (VMS). With pan-tilt-zoom (PTZ) and thermal imaging cameras in place, security personnel monitoring the train, bus or a commuting hub can track security threats when the lights are off. Instead of waiting around in the dark, patrol guards or police officers can be notified automatically, through the surveillance system, of the incident's location in order to quickly assist passengers. In a nutshell, thermal imaging cameras work by detecting heat that radiates from objects and body heat from people. The cameras present surveillance footage that may not be used to identify a person, but instead allow the security personnel to understand what is happening in challenging lighting conditions in order to respond appropriately and immediately. Thermal cameras are commonly used alongside the traditional PTZ network of cameras to enhance the overall IP surveillance system's effectiveness.

## Solution

With a comprehensive VMS in place, these cameras can be programmed in many ways to support various applications or usages. Thermal cameras can be used to locate heat-based dangers like fire, people hiding behind objects, freshly left footprints or even the resounding heat signature left after a gun is fired. With this technology, finding a threat or solving crimes can be done without delay and emergency situation response time can be drastically reduced and more lives can be saved. Network surveillance systems equipped with these cameras can be programmed to turn lights on in areas where motions are detected, zoom in on specific areas and automatically notify patrol guards. The system can also be programmed to send live video footage to the control room or to multiple locations simultaneously. Video footage can be viewed in multiple viewing windows and recordings can be transferred to cloud storage or to the control center's servers. Many leading video management software programs on the market should offer these capabilities among its standard or customized features.

Advancements in computer technology allows for constant improvement of many valuable features and functionalities designed to serve the increasingly complex requirements of today's effective network surveillance systems. Especially for onboard rolling stock use, the surveillance controller must have the required certifications and meet all the safety standards in place. Some features that are designed

specifically to meet the demands of challenging onboard situations include: anti-vibration, wide-operating temperature range, M12 connectors, lockable SATA hard drives and wireless/4G/3G communications capabilities. These transportation embedded systems must offer reliable 24/7 operations to provide peace of mind to the operation managers. The only other important steps left to consider include ensuring that there are operational and emergency response procedures in place and that system functionalities are being utilized to their maximum capabilities.

## Axiomtek tBOX



Axiomtek has been designing and manufacturing boards and systems that serve specific industry needs for decades. Our [tBOX](#) product line has become more specialized for specific transportation use including railway, vehicle PC, marine and commuter station use. Our [tBOXes](#) are designed to serve various applications including fleet management, highway and railway roadside systems, toll systems, surveillance controller, passenger information systems and more. Our award-winning [tBOX321-870-FL](#) for railway offers anti-vibration, ruggedized IP40 steel case and M12 screw-type connector. Its built-in 3rd Generation Intel® Core™ processor, Core™ i7-3517UE (up to 2.8 GHz) or Intel®

Core™ i3-3217UE (1.6 GHz), has been integrated into this robust system. These onboard processors and also onboard DRAM greatly reduce the impact of vibration and shock commonly experienced from railway field operations. The system is certified with EN50155 / EN50121 for rolling stock, complies with EN45545-2 for fire resistance and power interruption class S2 for power supply stability to provide great system reliability. The [tBOX321-870-FL](#) can operate in critical environments with temperature ranging from -40°C to +70°C.

The [tBOX](#) products offer extensive features, rich I/O alternatives and great compatibility, aiming at providing flexibility and expansion capabilities to the customers. Their mini PCI/PCIe ports can be used for different applications including wireless communications such as remote file or surveillance video downloads. Axiomtek's [tBOX](#) products support most operating systems including Windows 7, Windows 8, Linux and WES7. Axiomtek's embedded system products give mass transit system integrators advanced, scalable choices of controllers that can be customized to meet all their needs. These reliable systems provide around-the-clock security without the need for frequent replacements. Quick response, customization capability and prototype construction mean that Axiomtek can respond to any customer requirement to meet the demands for better mass transit security.

**About Axiomtek Co., Ltd.**

[Axiomtek](#) Co. Ltd. is one of the world's leading designers/manufacturers of PC-based industrial computer products. From our roots as a turnkey systems integrator specializing in data acquisition and control systems, Axiomtek has mirrored the PC evolution in various industries by shifting our focus toward the design and manufacture of PC-based industrial automation solutions.

Axiomtek Co., Ltd. established in 1990, has more than 60 distributor partners globally. Axiomtek offers Industrial PCs (IPC), Single Board Computers and System on Modules (slot CPU card, small form factor embedded boards & SoM), Fanless & Rugged Embedded System (eBOX, tBOX and rBOX), Industrial Firewall Platform, Industrial Gateway Solution, Touch Panel Computers (TPC), Medical PCs (MPC), Human Machine Interface (HMI), Digital Signage and Players (DS), Industrial Network and Network Appliances (NA).

As an associate member of the Intel® Internet of Things Solutions Alliance, [Axiomtek](#) continuously develops and delivers cutting edge solutions based on the latest Intel® platforms.