WHITE PAPER

Why Industrial IP Cameras Provide Better Performance

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Overview

Although most CCTV surveillance applications around the world continue to use commercial grade IP cameras to remotely monitor traffic intersections or valuable assets outdoors, commercial grade IP cameras simply were not designed for use in harsh outdoor environments. Unlike commercial grade IP cameras, industrial grade IP cameras are specifically designed to withstand the toughest conditions Mother Nature, or ruthless vandals, throw at them. Topics discussed in this white paper include:

- The importance of reliable CCTV surveillance
- Benefits of industrial grade IP cameras
- How industrial IP cameras ensure reliability

The Importance of Reliable CCTV Surveillance

CCTV surveillance cameras have become a common sight in cities around the world, with cameras used at major intersections to catch speeders and would-be runners of red lights. However, as many drivers have learned, these outdoor cameras have a high failure rate and consequently only a fraction of the cameras installed are actually operational. In some cities, nearly 50% of existing outdoor cameras are non-functional and maintaining a functioning outdoor video surveillance system can be prohibitively expensive.

Global warming is making hot days hotter, cold days colder, rainfall and flooding heavier, hurricanes stronger and droughts more severe. Therefore outdoor environments are becoming more and more challenging. The majority of installed cameras seen around cities or deployed outdoors are commercial grade. Unable to withstand harsh outdoor environments, these cameras are subject to frequent breakage and failure.

Outdoor environments require an industrial grade camera which can perform reliably and provide constant video stream when confronted with the harsh, wide-temperature conditions seen in ITS, railway trackside, and oil & gas environments. Industrial grade cameras guarantee reliability and quality as industrial grade components are selected and during manufacturing process, cameras undergo industrial-strength testing and inspections.

In this paper, we will describe the reasons and benefits of industrial grade cameras. Using industrial grade cameras will not only help keep your installation budget under control, but also drastically reduce the cost of maintaining your CCTV camera system.

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Moxa is a leading manufacturer of industrial networking, computing, and automation solutions. With over 25 years of industry experience, Moxa has connected more than 30 million devices worldwide and has a distribution and service network that reaches customers in more than 70 countries. Moxa delivers lasting business value by empowering industry with reliable networks and sincere service for automation systems. Information about Moxa's solutions is available at www.moxa.com.

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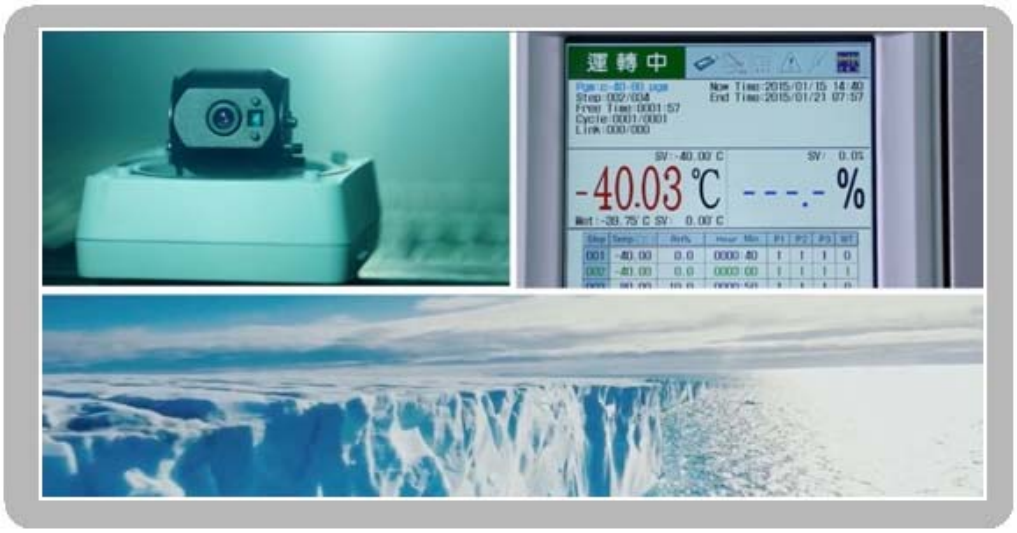
Reliable Networks ▲ Sincere Service

Benefits of Industrial Grade IP Cameras

A reliable industrial grade camera is able to operate reliably under wide temperature extremes without a heater or a fan. The thermal design of industrial cameras allows it to operate under actual outdoor environments, ranging from temperatures as low as -40°C to as high as 75°C. Many of the outdoor cameras used today are actually indoor cameras with an extra layer of protection and enclosed with a miniature heater and fan. These ad hoc solutions present additional points of failure that can destroy the camera when they malfunction. For instance, if the fan breaks, the camera may overheat and break down. If the heater breaks, the camera may freeze and stop working. Also, since fans and heaters are power-hungry devices, applications that require fans or heaters are at an additional disadvantage since power wiring can become complicated and expensive in the field. The heater and fan-less design in industrial grade cameras increases overall reliability as the lack of moving parts decreases power consumption and breakage while increasing lifespan.

Industrial IP cameras have high MTBF and lower failure rates because of the lack of additional or detachable parts, such as a fan or a heater. In commercial grade cameras, the system's MTBF actually depends on a combination of the MTBF of the heater, the fan, and the camera unit itself. When cameras need to be constantly replaced, the cost of maintaining the system can quickly dwarf the cost of deploying it.

Moxa's industrial-grade IP cameras are tested to ensure operation from -40 to 80°C



Industrial IP cameras are used in a variety of applications, including city surveillance, highways, mines, and oil and gas. To ensure system reliability, the cameras are industry certified to comply with EN 50121 (railway waysides), EN 55022, C1 D2 ATEX zone 2 (process automation), and NEMA TS2 (highways) specifications. Industrial cameras are IP66-rated and possess Level 3 high EMI/EMC protection for consistent performance in rainy, dusty, or high EMI environments. For protection against vandalism and tampering, the IP camera enclosure are also IK-10 (EN 62262) rated, the highest level of vandal resistance for outdoor applications.

Industry Certifications

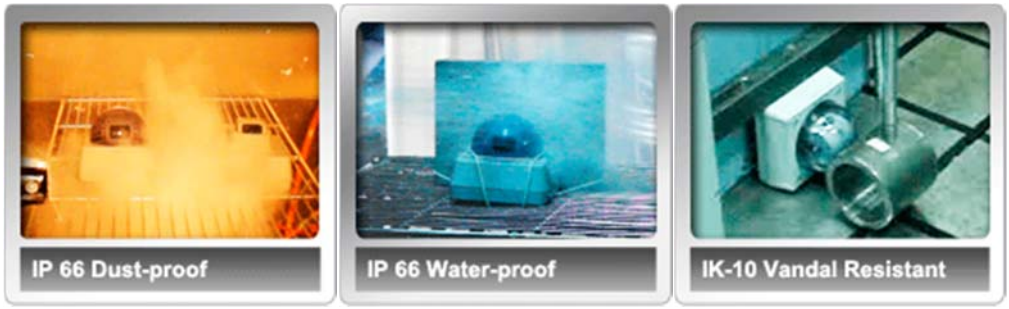
Another advantage of industrial grade IP cameras is that due to their high MTBF, high quality, and reliability, maintenance and replacement costs are consequently low. Most outdoor cameras are deployed in out-of-the-way locations. Imagine the time, money and manpower required to continually replace these cameras in the field. Industrial grade cameras keep your installation budget under control, and reduce the costs of maintaining your CCTV camera surveillance system.

	Existing Outdoor Camera	Real Outdoor Camera
MTBF	Low	High
Fan	Yes	No
Heater	Yes	No
Maintenance cost	High	Low
Replacement cost	High	Low
Temperature range	-10 to 50°C	-40 to 75°C
Industry approvals	Limited	Yes

How Industrial Grade IP Cameras Ensure Reliability

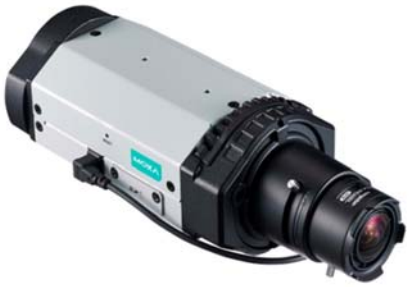
Moxa's industrial grade IP cameras provide reliability and quality because strict measures are taken at each phase of product development, from selecting materials to conducting a 100% product inspection. Moxa's entire IP camera line is produced with the same consistent rugged design because only high quality, industrial grade materials and components are selected. The thermal design in Moxa's IP camera allows reliable operation under -40 to 75° extreme environments without heater and fan.

Moxa's IP cameras are also IP66 and IK-8/10 (EN 62262) rated, which means the cameras are water and dust-proof, vandal-resistant, and protected against shock and vibration. When testing for industrial-strength, each Moxa industrial grade IP camera undergoes 40 hours of cyclic and wide temperature burn-in tests. The key component tests also involve 20+ days and 200+ hours burn-in of the lens and IP camera motor respectively. After assembly, each Moxa IP camera undergoes a 100% product and quality inspection, meaning all of the camera's functions are tested, such as the light sensor, light and dark spots, and color calibration. During operation testing, cameras are chambered and burned-in from 6 to 40 hours, between 60° to 75°C.

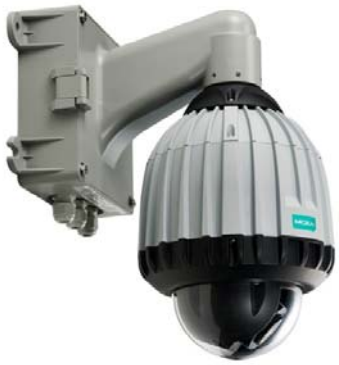


Unlike commercial manufacturers, Moxa's core competence includes building robust devices for use in harsh industrial environments. This experience has given Moxa a wealth of expertise in thermal design and building rugged devices. A prime example is the VPort 36-1MP, which is the world's first outdoor IP camera, with an operating temperature range of -40 to 75°C without using a heater or a fan. Each part of the VPort 36-1MP was built with thermal performance and reliability in mind, from the proprietary heat sink to PCB component layout to chip selection. This ruggedness allows these VPort cameras to excel in oil and gas, rolling stock, and Intelligent Transportation System (ITS) applications. Although speed dome cameras have also become popular, not many manufacturers can produce them due to the complex nature of the technology. Moxa will be releasing its first industrial-grade PTZ speed dome camera, the

VPort 66-2MP in 2015. Setting a higher standard for robust engineering, the industrial-grade VPort 66-2MP will feature a vandal-proof design, along with IP66 rain and dust protection, and a NEMA 4X type form factor to assure absolute reliability in helping protect people, secure property and maintain safe, efficient processes.



VPort 36-1MP, the world's IP camera with a -40 to 75°C wide temperature range



VPort 66-2MP PTZ speed dome camera with IP66 and IK10 ratings

To learn more about industrial-grade IP cameras, visit:

- http://www.moxa.com/security
- http://www.moxa.com/product/VPort_36-1MP_Series.htm

To download the IP Surveillance brochure, visit:

- http://www.moxa.com/support/request_catalog_detail.aspx?id=1415

For more details about the VPort 66-2MP, contact Moxa at:

- http://www.moxa.com/event/Security/2014/Industrial_IP_Surveillance/index.htm#table