Microchip PoE Powers Smart Cities

Learn more about our Power over Ethernet (PoE) solutions used in smart cities.

Smart Cities on the Rise

The rise of smart cities marks a transformative era wherein a unique blend of innovation and technology creates a connected and reliable environment for the people even in the most challenging circumstances. Smart cities have paved their way into the future by empowering city administrators to make informed decisions with real-time information. Seamless connectivity in a smart city fosters improved services and safety of the citizens, while prioritizing their comfort.

The Integrated City Network

A smart city network usually integrates a variety of devices to improve functioning and enhance safety. The most used devices include surveillance cameras, wireless access points, smart streetlights, traffic management systems and sensors. It is important for smart cities to have reliable and sustainable power sources to ensure the continuous operation of these devices. Additionally, energy-efficient technologies and power management strategies are often implemented to optimize power consumption in smart city infrastructure.

Embrace the Future With PoE for Smart Cities

Power over Ethernet (PoE) technology enables delivery of both power and data over a single Ethernet cable, facilitating quick and easy installation of a variety of Ethernet-based devices including:

- Wireless LAN Access Points, 5G small cells, wireless backhauls and point-to-point radios for wireless networks
- IP cameras for video surveillance systems
- Radio Frequency Identification (RFID) readers for access control solutions

The integration of PoE with these Ethernet-based devices is a synergy that makes them more versatile, efficient and reliable. PoE is also an energy-efficient technology that minimizes power loss in long distance transmission and offers power management, preventing unnecessary consumption of power.

This powerful combination proves to be a game-changer in the ascent of smart cities by enhancing public Wi-Fi and physical security applications and access control systems for public safety.

PoE Solutions for Smart Cities

The importance of choosing **PoE solutions** that not only address specific environment-related deployment and operational challenges but are also resilient enough to withstand the increasing frequency of natural calamities cannot be overstated.

Microchip PoE solutions efficiently power converged networks that connect people and processes, ensuring communication, connectivity and safety in some of the most remote and hazardous sites, even in the most challenging circumstances. Microchip **PoE midspans and switches** are specifically designed to meet unique requirements of IP camera, Wireless access point, RFID reader and other IP-based device deployments in outdoor environments for smart cities. These requirements include:

- Waterproof to function in strong storms and can even be submerged in water for a limited period
    - We take a unique approach by providing a totally sealed unit that has an Ingress Protection (IP) rating of 66/67. This means the unit can not only resist heavy seas or powerful jets of water, but it is also protected against immersion in water for up to 30 minutes at depths up to 1000 mm.
- Advanced protection against lightning surge
    - All our outdoor units meet enhanced surge protection up to 6 KV on data and AC Lines.
- Withstanding extreme temperatures
    - Our outdoor midspans and switches are purposefully built to withstand extreme weather conditions, temperature variations and other outdoor challenges. We have products enduring extreme temperatures ranging from -40°C to 65°C.
- Resistance to shock, freefall and vibration
    - The compact design of our outdoor midspans and switches makes them robust in the face of strong winds, dust and corrosion.
- Tamperproof sealed units
    - While some vendors place indoor midspans inside electrical enclosure boxes for outdoor installations that are subject to failure due to extreme temperatures, our outdoor PoE

systems are built in completely sealed compact metal enclosures that are ruggedized to improve the longevity of your network infrastructure.

- Plug-and-play for seamless implementation
  - o Our PoE systems are plug-and-play sealed units that need no configuration at all.
- Intelligent power management
  - o The power management capabilities of our PoE solutions facilitate scheduling, enabling, disabling and reassigning power to where it is needed. Centralized power management allows control and remote power cycling of PoE-powered devices. Our PoE integrated circuits add Power Forwarding to an Ethernet powered device (PD) and provide more flexibility to the installation of networked devices by allowing an additional device to be cascaded in series to extend a single Ethernet run.

The Importance of Cybersecurity

It's obvious that as cities become more connected, the importance of cybersecurity intensifies. Cybersecurity plays a critical role in protecting critical infrastructure from unauthorized access and safeguarding smart cities against malicious activities as well as securing privacy of citizens.

The Microchip **PDS-204GCO** is a next-generation IEEE® 802.3bt-compliant outdoor PoE switch for smart cities. It allows Wi-Fi® access points, security network cameras and many other IoT devices to receive power and data over standard Ethernet cables, leaving the network infrastructure completely unaltered. PDS-204GCO provides increased cyber protection plus the redundancy required for high network availability in mission-critical outdoor applications with long-distance connectivity.

The PDS-204GCO's cybersecurity features protect both the data traffic transmitted within the switch and the switch's system management. Key features for protecting transmitted data within the switch include endpoint device authentication and authorization, manual switch-traffic policy management and Denial-of-Service (DoS) attack prevention. Key features for protecting switch management and configuration include securing web browsing using self-signed or Certificate Authority (CA)-signed certifications and user authentication and authorization by remote servers using RADIUS or TACACS+ security mechanisms.

The PDS-204GCO includes four PoE Gigabit Ethernet ports that support the IEEE 802.3bt (Type-4) standard and two Small Form-Factor Pluggable (SFP) fiber links that each support 1 Gigabit per second (Gbps) or 2.5 Gbps speeds. The fiber links can be used as optical uplink ports for surveillance cameras and as a redundant uplink path for increasing network availability. Support for ITU-T G.8032 Ethernet Ring Protection Switching (ERPS) technology ensures communication continues if there is an uplink link failure.

Microchip Helps System Integrators Ensure Public Safety in Smart Cities

Active Solutions, a leading networking and communications system integrator, solves IP surveillance deployment challenges to enhance public safety with Microchip PoE.

A municipal client approached Active Solutions to design and install an outdoor IP video system featuring cameras in high-profile locations across multiple city sites—including some in very hard-to-reach locations. It was a complex installation requiring significantly higher power consumption than traditional security cameras.

The Active Solutions team looked for the best PoE solution in the industry to address the outdoor and power-related deployment challenges they faced. Our industry-leading outdoor PoE switch is ideally suited for wireless point to-point, multipoint and IP surveillance camera installations in extreme weather conditions.