

# Solving Power-over-Ethernet (PoE) Challenges

## Features & Benefits

- Gigabit PoE for today's fastest, most advanced network-powered equipment.
- Fully IEEE 802.3af compliant system-wide solution
- Flexible external power enables creative solutions
- Powered Device Reset on fiber data loss
- Optional redundant SFP fiber uplink ports to meet high availability requirements
- Lifetime Warranty
- Transition Networks' deep application experience, knowledge and broad product lineup.

## Problem solving with the SGPOE Power-over-Ethernet Converter

Certain cities that have a more moderate fluctuation in temperature may not need extended temperature-rated network equipment, and sometimes putting a solution together requires a total system outlook. Often, there may be more than one solution to a problem. An equipment manufacturer with deep application knowledge can be an invaluable advisor during the design phase, preventing mistakes and helping to find cost savings. The recent deployment of Transition Networks new SGPOE Power-over-Ethernet Media Converters in a city-wide outdoor security installation offers rich lessons in overcoming system-level obstacles.

## Challenges at the Network Edge

A customer looking to deploy an outdoor municipal network camera system was interested in using Power-over-Ethernet power sourcing equipment (PSE) fiber-to-copper media converters to power high speed, high-resolution color cameras installed on luminaires at traffic intersections (see Figure 1). A Gigabit speed media converter was called for, both to future-proof the network and to allow compatibility with existing Cisco Systems switches at the other end of the link.

Three different products from Transition Networks' broad lineup were used to meet the customer's requirements. Transition Networks' new SGPOE media converter filled the critical role of Gigabit speed Power-over-Ethernet media conversion, while also offering flexible options such as redundant fiber uplinks for high availability in security applications and operation from external DC power. However there still remained obstacles to success, and this is where Transition Networks' broad product lineup came to the rescue.

Because at each light pole only 480VAC was available, a low-voltage means to power the SGPOE was still needed. From discussions with city engineers it was learned that each of the outdoor installation locations was less than 400ft from a building with a power source. The plan was to use hybrid copper/fiber underground cable to simultaneously carry the Gigabit speed fiber optic data signal and to hardwire low-voltage DC power to the SGPOE.

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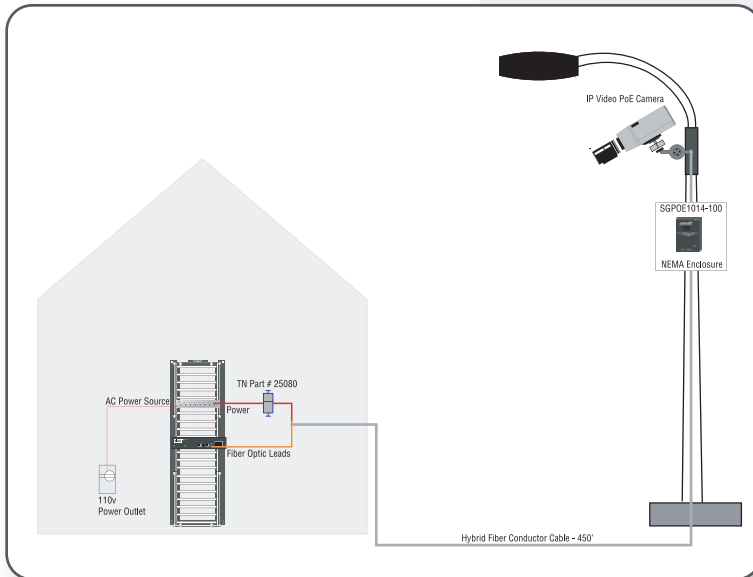


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1-800-526-9267  
info@transition.com  
www.transition.com

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Figure 1



PoE PSE equipment is generally designed to run on either AC line voltage or 48VDC, in order to supply that voltage to the Powered Device (PD). The IEEE 802.3af standard requires this input voltage to be within 2% tolerance. After some analysis, a consensus was reached to place a Transition Networks' 25080 Industrial Power Supply in the building 400ft away. Then adjust the output voltage on that equipment to accommodate for line loss, and power the SGPOE1040-100 with a voltage within the tolerance mandated by the IEEE 802.3af standard.

To ensure compatibility with the Cisco switches over the high-speed fiber links Transition Networks' TN-GLC-LH-SM Single-Mode Gigabit SFP modules were chosen.

Finally, the deployment was outdoors and would normally call for extended temperature equipment to accommodate swings in weather. In this case, the customer was located in a very mild climate and had no need for extended temperature equipment. Still, careful consideration was given to this system-level design issue.

## Summary

As this real-world application example illustrates, there are often system-level design issues beyond simply selecting a media converter. Working with a manufacturer that can offer its breadth of knowledge and experience to the design team adds additional value to customers pondering "bleeding edge" technology deployments.

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