

# MAGCOM SPE Kit

Value Added Products for SPE Quicker, Further and Safer!

MAGCOM SPE Kit is a versatile solution with intuitive installation as a media converter platform which provides an easy technology migration to Single Pair Ethernet (SPE). Whether you're looking to optimize performance, reduce costs, or future-proof your network infrastructure, SPE kit provides the solution to unlock the full potential of SPE.

## I. Features

- Easy to install, easy to use: Seamless and hassle-free installation.
- Seamless Integration: Easily convert signals without interrupted networking.
- Versatility: Well-suited in various environments, e.g. industrial, SOHOs, or smart homes.
- Plug-and-Play: Quick and intuitive installation.
- Two-Way Conversion: Seamlessly convert Ethernet to SPE and back.
- Standardized Connectivity: IP67 connectivity, ideal for harsh environments.



## II. Contents of SPE Kit

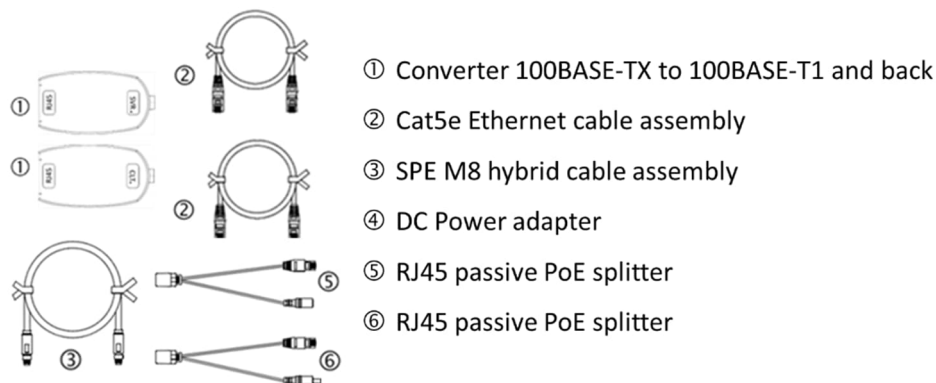
All you need to do is unpack and plug in the SPE Kit to your existing network infrastructure, and then you can start the bi-directional conversion of Ethernet protocols.

- Traditional Ethernet port to SPE  
To inject power and activate the converter, the RJ45 passive PoE splitter transmits the signal via the Cat5e cable to the RJ45 port on the converter. On the CLT (Client) port, connect the SPE M8 Hybrid cable assembly. At this point, the conversion

from traditional Ethernet to SPE is completed, and SPE signal starts.

### SPE back to traditional Ethernet Port

Connect the other end of the SPE M8 Hybrid cable assembly to the SVR (Server) port to continue the SPE signal. Next, plug the Cat5e cable into the RJ45 port of the converter, and on the other end of the Cat5e cable, connect the RJ45 passive PoE splitter. This serves as both the power source for your device and as a means to deliver the Ethernet signal back to your server.



### III. Specification of SPE Kit

- Compliance with Standards  
 The converters adhere to IEEE 802.3 Ethernet standards. IEEE 802.3u specifies Fast Ethernet standards, while IEEE 802.3bw defines the specifications for 100BASE-T1 Ethernet over a single twisted pair (Single-Pair-Ethernet, SPE).
- Ethernet Signal Conversion  
 Bidirectional conversion between the 100BASE-TX and 100BASE-T1 Ethernet standards involves translating the signaling protocols to facilitate seamless communication between devices operating on different Ethernet standards.
- Passive Power over Ethernet (PoE) Splitter Cable Kit  
 RJ45 Passive PoE splitter provides power to the device over Ethernet. This allows power transmission over standard Ethernet cables without requiring active-specialized hardware, enhancing flexibility and simplicity in installation.
- SPE Connector Standards  
 Connectors compliant with the IEC 63171-6 standards, specifically M8 4-Way type, are designed to facilitate robust and reliable connections for SPE applications.

- **Voltage Range Compatibility**  
The operating voltage range of 12V with a DC adapter allows the device to accommodate power supply configurations in smart home, SOHO, industrial, and automotive environments, ensuring reliable operation.
- **LED Indicators for Status Monitoring**  
LED indicators provide visual feedback on linking status and power state. They offer real-time feedback on the operational status, facilitating troubleshooting and monitoring in both indoor and outdoor environments.
- **Extended Operation Temperature Range**  
An extended temperature range of -40°C to +85°C enables reliable operation in harsh environments, such as industrial, automotive, and outdoor applications.

#### IV. PoE V.S. SPE

Power over Ethernet (PoE) and Single Pair Ethernet (SPE) share similarities in their ability to transmit power and data over a single cable, simplifying network infrastructure and reducing the need for additional wiring.

##### Concern in PoE

While PoE brings the convenience of simplifying wiring by delivering power and data over the same cable, it also introduces certain risks. As more devices are added to a PoE network, there is a potential for overloaded cable bundles, leading to increased heat generation and elevated risks of overheating. This heightened risk of fire poses a significant concern, particularly in environments where numerous powered devices are interconnected.

The SPE M8 Hybrid solution is surpassing traditional PoE capabilities with a robust power capacity of up to 8A, a substantial increase compared to the standard PoE capacity of 1.2A. This elevated power threshold facilitates the simultaneous connection of multiple high-power devices within the same networking environment, a feat that would typically strain conventional PoE implementations. By leveraging this enhanced power capacity, users can seamlessly integrate a broader range of devices into their network infrastructure without encountering power-related limitations or compromising performance.

Below table gives the comparison of IP camera deployment in different solutions:

	PoE	Wireless	SPE	Remark
Flexibility for Deployment	Good	Poor	Excellent	Traditional wireless cameras require batteries or AC power. In contrast, the SPE M8 Hybrid solution combines power sources for higher reliability and greater flexibility, especially in areas where there are no power outlets available.
Quality of Video	Average	Poor	Excellent	Single-Pair Ethernet offers a reliable, high-performance alternative to Wi-Fi, providing consistent connectivity, low latency, and robustness against bandwidth limitations and packet loss.
Fire Safety	Poor	Good	Excellent	SPE M8 Hybrid solution's higher power helps mitigate the risk of fire associated with PoE deployments, providing users with a reliable and secure power delivery solution for the network infrastructure.
Cyber safety	Good	Poor	Excellent	SPE offers a wired connection, which inherently reduces the risk of interception and unauthorized access compared to wireless networks.

Conclusion:

This enhanced power capacity not only ensures greater efficiency but also significantly reduces the risk of fire hazards. In comparison to PoE, SPE stands as a superior solution, offering advancements that pave the way for safer and more reliable power delivery systems in various applications.

## Value Added Products for SPE

Quicker, Further and Safer!

### I. SPE Extender



SPE Extender  
SPEE8H2001  
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The SPE Extender extends SPE signal transmission, enabling coverage expansion even in areas lacking power outlets. With seamless scalability and cost-effectiveness, the solution eliminates the need for additional wiring or infrastructure modifications, accommodating network expansion without

disruption or excessive expenses.

- **Plug-and-Play Installation**  
Standardized mechanisms and protocols enable seamless integration with existing network infrastructure, minimizing the need for manual configuration and setup procedures.
- **Standardized SPE M8 Hybrid Connectors**  
SPE M8 Hybrid connectors bring compatibility and interoperability with other SPE-compliant devices. They provide a reliable and robust connection interface suitable for even harsh environmental conditions.
- **Coverage Expansion without External Powering**  
The SPE Extender is designed to extend signal transmission and allow for seamless coverage expansion in areas where power outlets are not deployed.
- **Enhanced Performance Signal Transmission**  
Advanced signal processing minimizes signal interference, noise, and distortion, resulting in improved signal integrity and reliability.
- **Scalability**  
Seamless scalability without the need for additional wiring or infrastructure modifications. The extender supports the addition of new devices or expansion of SPE network without disrupting ongoing operations or reconfiguration.
- **Cost-Effectiveness**  
By eliminating the need for additional access points and maintaining network coverage without additional hardware investments or operational expenses.
- **Stable Signal Quality**  
With robust error correction techniques and signal amplification mechanisms, to maintain consistent and reliable data transmission performance, ensuring no signal degradation over time.

The SPE extender can significantly improve the reach, coverage, and Performance in your SPE networking, and is a valuable tool for both residential and commercial environments.



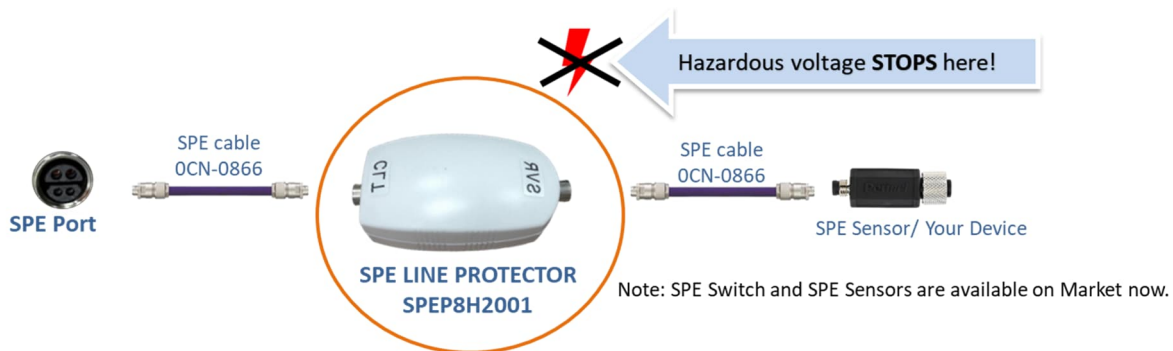
## II. SPE Line Protector



SPE Line Protector  
SPEP8H2001

SPE Line Protector: the ideal solution for ensuring that your network remains resilient and operational at all times. Designed with standardized SPE M8 Hybrid connectors, it makes installation quick and intuitive, without any hassle. By preventing interruptions in data transmission and mitigating potential damages, it shields your networking equipment from unexpected hazardous voltages, enhances network performance. The line protector proactively safeguards networking devices such as routers, switches, and servers, ensuring the smooth operation of the entire network system by preventing damage.

This not only saves costs in repairs or replacements but also simplifies maintenance tasks and reduces downtime. The line protector is an essential element for maintaining the integrity and performance of modern network environments.



MAGCOM SPE Kit bridges the gap between traditional Ethernet and SPE, empowering you to experience the benefits of SPE while maintaining compatibility and flexibility of today's Ethernet. Integration of the Extender and Line Protector makes your network infrastructure safer and more robust!

### Magcom in SPE

Since 2020, MAGCOM as a member of the SPE community, has achieved notable milestones in the years, MAGCOM publishes technical articles to the SPE community based on our expertise-DMT® (Discrete Magnetic Technology). Following by development of patented SPE products, we have demonstrated innovation and technical profession. In 2023, we expanded our involvement by co-founding the SPE Taiwan Network and achieving recognition by winning the 1st prize in the SPE Design Challenge with our Closed-loop SPE System Saving the Environment.

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