

# Surveillance Ethernet

Powering Next Generation  
Surveillance Network Solutions



**VOLKTEK**

# PRODUCT FEATURES & BENEFITS



## Robust Switch Performance

Built with field-hardened components, Volktek Surveillance Ethernet switches can withstand harsh environments such as constant vibration, heavy shocks, humidity and extreme temperatures ranging from -40°C to 75°C. These switches provide protection against surge, ESD, reverse polarity, and short circuit to deliver non-stop PoE power to various power devices.

## Efficient Power Booster Technology

The dual power input and wide voltage input range of the Volktek Switch make it ideal for factory automation applications. With a voltage input range of 24~57VDC and the ability to boost power up to 50Vdc for connected devices, the switch can support a wide range of power environments. Its advanced features ensure reliable and efficient network performance, making it an excellent choice for industrial networks that require scalability and flexibility.

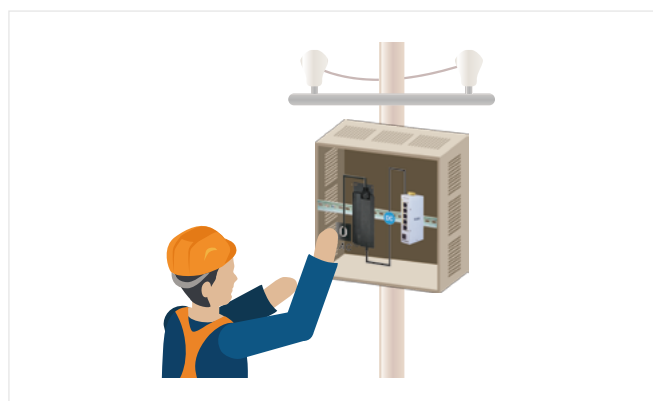


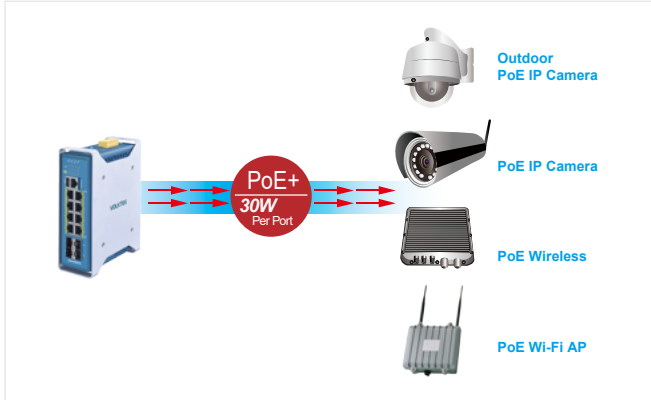
## Supported IP-CAM Solutions

The Volktek PoE Switch is an advanced networking solution that supports ONVIF and can automatically discover ONVIF-aware IPcam devices, simplifying integration into surveillance applications. The switch can also add the devices to a topology map for easy visual management, with icons indicating their status in red, yellow, or green. With these advanced features, the switch provides a reliable and convenient solution for modern IP surveillance networks, ensuring scalability and efficiency.

## Hardened Power Connector with User Friendly Design

The Volktek 4-Port PoE Switch is designed for modern surveillance networks, featuring a Mini-DIN connector for reliable power delivery to IP cameras and other devices. Its ability to support different power consumption levels minimizes disruptions, and the included adapter holder simplifies installation on a Din-Rail. With up to 4 PoE ports, advanced QoS capabilities, and redundant power supplies, the switch ensures optimal network performance. Ideal for industrial and rugged environments, the switch offers reliability, efficiency, and convenience for modern IP surveillance networks.



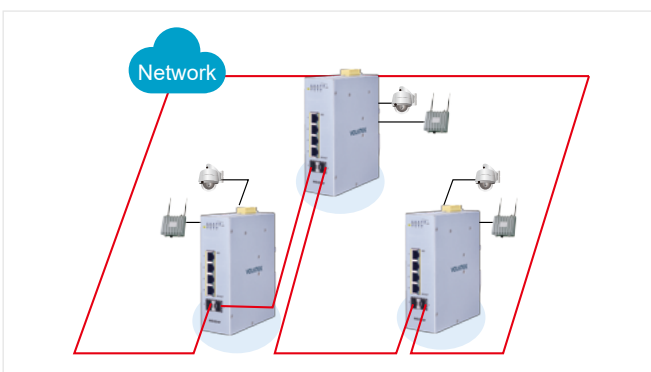
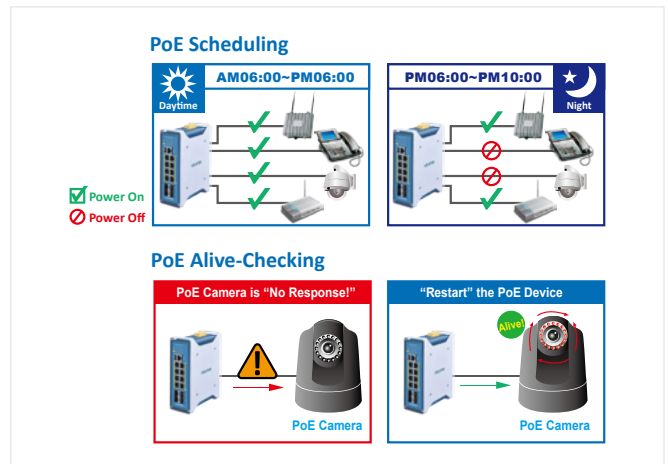


## High-Power Budget for PoE Network Devices

Designed with IEEE 802.3af/at standards capable of delivering up to 30W of power per port over the existing Ethernet cable, Volktek PoE switches provide power to connected power devices without the need of an external power source. The PoE switches allow simple plug-and-play installation of various PoE devices.

## Intelligent PoE+ for Powered Devices

Elevate your power management experience with Volktek Managed PoE Switches. Boasting advanced features such as PoE scheduling for energy conservation, power feeding priority for critical devices, PD alive check for device health monitoring, per-port power budget control for tailored planning, and remote power on/off capabilities, Volktek Managed PoE Switches provide unparalleled efficiency and flexibility to enhance your life quality.

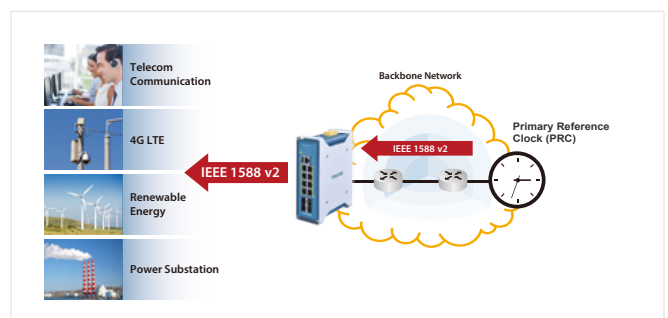


## Redundant and Resilient Surveillance Network

Most Volktek PoE products are equipped with dual Gigabit SFP ports and various network redundancy protocols such as Volktek proprietary Xpress Ring, STP/RSTP/MSTP, Dual Homing, and Ethernet Ring Protection Switching (ERPS) to ensure network reliability.

## IEEE 1588v2 PTP for Time Synchronization

Volktek surveillance Ethernet switches support leading-edge IEEE 1588 v2 PTP time synchronization. This function enables the establishment of a stable and organized end-to-end connection between the switch in the outdoor cabinet and the regulatory core network.



# Railways Solution



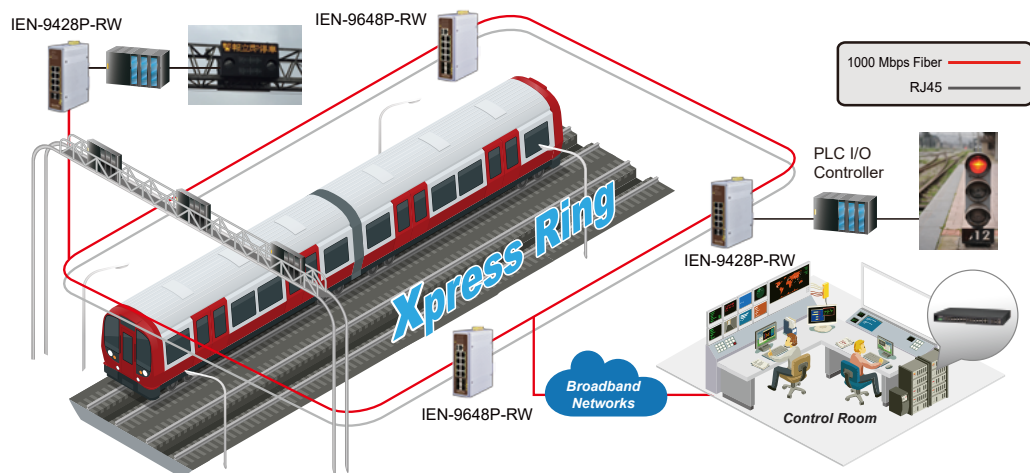
## Customer's Requirements

Centralized traffic control (CTC) railway signaling consolidates train routing decisions. The system consists of a centralized train dispatcher's office that controls railroad interlocking and traffic flows. Network management involves the centralized traffic control for an optimum system with the following functions: Ethernet network

design; maintenance and control the local network security; remediation of faulty equipment; maintaining appropriate quality standards in terms of network configurations and many more. To realize all these, switches must also be capable to work in these kinds of harsh conditions.

## Proposed Solutions

- Xpress Ring and ERPS ring protocols recovers from the network failure in time scale of milliseconds. This ensures non-stop transmission of real-time video and data to control room.
- Volktek embedded-Element Management System 'Netlite' discovers devices automatically and allows you to view its picture and link status making debugging easy.
- Real-time link status and traffic statistics, Informative network reporting functions
- Provides auto-provisioning so that network can be managed and necessary upgrades and configurations can be done from the monitoring places.
- Hardware monitors the board temperature and alarms the manager if any abnormal temperature is observed.



## Products Applied



### SEN-9425P-24V-RW

- Unmanaged Railway Certified PoE+ Industrial Switch
- 4 x 10/100/1000 PoE+ & 1 x 10/100/1000 RJ45 & 2 x GbE SFP



### SEN-9648P-24V-RW

- Managed Railway Certified PoE+ Industrial Switch
- 8 x 10/100/1000 PoE+ & 4 x GbE SFP

# Power Substation



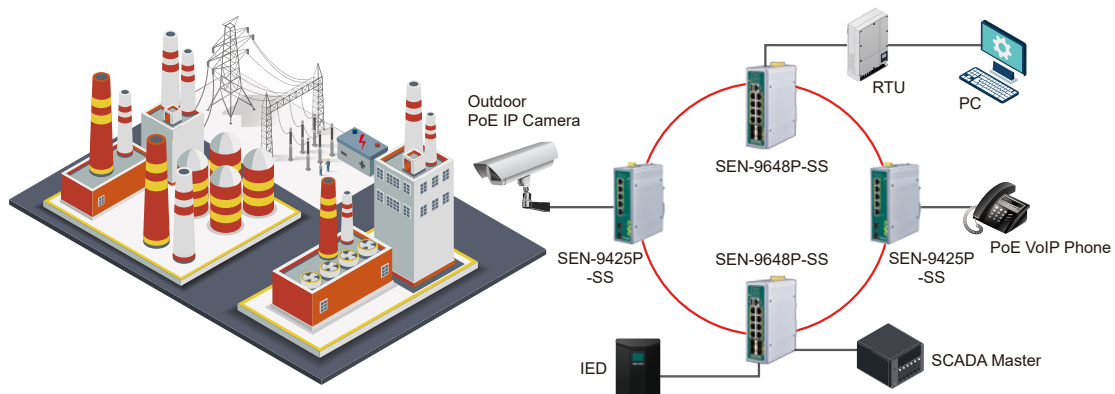
## Customer's Requirements

Electric utilities realize the capabilities of Ethernet communications in the substation as Ethernet moves to gigabit speed backbones. As Ethernet networks provide more benefits compared to other approaches engineers use Ethernet networks in electric power substations

for an increasing number of applications, including automatic control, protection, remote maintenance, and disturbance analysis. They recognize that many of these functions are mission-critical and therefore specify redundant Ethernet networks to increase the availability.

## Proposed Solutions

- Industrial grade switches provide better protection against ESD, and also certified with EMI/EMC protection. And also has overcurrent and overvoltage protection.
- Lower development and maintenance cost, since the switches are loaded with the advanced features.
- Auto-provisioning scripted files allow the user to update the firmware for the entire network instead updating by switch after the switch.
- Supports precise synchronization as per IEEE 1588v2 so that integrating all functions in now simple.
- Extensive management and filter functions plus a variety of redundancy protocols and port security.



## Products Applied



### SEN-9425P-24V-SS

- Unmanaged Substation Certified PoE+ Industrial Switch
- 4 x 10/100/1000 PoE+ & 1 x 10/100/1000 RJ45 & 2 x GbE SFP



### SEN-9648P-24V-SS

- Managed Substation Certified PoE+ Industrial Switch
- 8 x 10/100/1000 PoE+ & 4 x GbE SFP

# PRODUCT INTRODUCTION

## Managed PoE+ Switches



### HNS-8615P

L2+ Managed 4 x 10/100/1000 PoE+ & 1 x 10/100/1000 RJ45 & 1 x FX/GbE SFP Industrial Switch



### HNS-8605P

L2+ Managed 4 x 10/100/1000 PoE+ & 1 x 10/100/1000 RJ45 Industrial Switch



### 9560-16GP4XS

Managed 16 x 10/100/1000 RJ45 PoE+ & 4 x 1G/10G SFP+ Industrial Switch



### INS-8624P

L2+ Managed 4 x 10/100/1000 PoE+ & 2 x FX/GbE SFP Industrial Switch



### IEN-8608PA-24V

L2+ Managed 8 x 10/100/1000 PoE+ Industrial Switch, USB Support



### IEN-8608PA

L2+ Managed 8 x 10/100/1000 PoE+ Industrial Switch, USB Support



### IEN-8648PA-24V

L2+ Managed 8 x 10/100/1000 PoE+ & 4 x GbE SFP Industrial Switch, USB Support



### IEN-8648PA

L2+ Managed 8 x 10/100/1000 PoE+ & 4 x GbE SFP Industrial Switch, USB Support



### 9005-16GP2GS

L2+ Managed 16 x 10/100/1000 PoE+ & 2 x FX/GbE SFP Industrial Switch



### 9005-24GP2GS

L2+ Managed 24 x 10/100/1000 PoE+ & 2 x FX/GbE SFP Industrial Switch

## PRODUCT APPLICATION



Tunnel Application



Highway Surveillance

## Unmanaged PoE+ Switches



### HNS-8405P

Unmanaged 4 x 10/100/1000 PoE+ & 1 x 10/100/1000 RJ45 Industrial Switch



### HNS-8415P

Unmanaged 4 x 10/100/1000 PoE+ & 1 x 10/100/1000 RJ45 & 1 x GbE SFP Industrial Switch



### IEN-8205P-24V

Unmanaged 4 x 10/100/1000 PoE+ & 1 x 10/100/1000 RJ45 Industrial Switch



### INS-8224P

Unmanaged 4 x 10/100/1000 PoE+ & 2 x GbE SFP Industrial Switch



### IEN-8225P-24V

Unmanaged 4 x 10/100/1000 PoE+ & 1 x 10/100/1000 RJ45 & 2 x GbE SFP Industrial Switch



### 7160-7GP1G-24V

Premium unmanaged 7 x 10/100/1000 PoE+ & 1 x 10/100/1000 RJ45 Industrial Switch



### INS-8424P

Unmanaged 4 x 10/100/1000 PoE+ & 2 x GbE SFP Industrial Switch



## UL Certified Switches



### IEN-8205P-24V

Unmanaged 4 x 10/100/1000 PoE+ & 1 x 10/100/1000 RJ45 Industrial Switch



### IEN-8225P-24V

Unmanaged 4 x 10/100/1000 PoE+ & 1 x 10/100/1000 RJ45 & 2 x GbE SFP Industrial Switch



### SEN-9425P-24V-SS

Unmanaged 4 x 10/100/1000 PoE+ & 1 x 10/100/1000 RJ45 & 2 x GbE SFP Industrial Switch  
**SUBSTATION APPROVAL**



### 9060-4GP2GS-360W

L2+ Managed 4 x 10/100/1000 PoE++ & 2 x GbE SFP Switch, 360Watt PoE budget  
**NEMA APPROVAL**



### SEN-9648P-24V-SS

Managed 8 x 10/100/1000 PoE+ & 4 x GbE SFP Industrial Switch, USB Support  
**NEMA APPROVAL**



Shoreline Surveillance



PoE Solution for Base Stations

# PRODUCT INTRODUCTION

## Substation Certified Switches



**SEN-9425P-24V-SS**  
Unmanaged 4 x 10/100/1000 PoE+ & 1 x 10/100/1000 RJ45 & 2 x GbE SFP Industrial Switch  
**SUBSTATION APPROVAL**



**SEN-9428P-24V-SS**  
Unmanaged 8 x 10/100/1000 PoE+ & 2 x FX/GbE SFP Industrial Switch,  
**SUBSTATION APPROVAL**



**SEN-9648P-24V-SS**  
Managed 8 x 10/100/1000 PoE+ & 4 x GbE SFP Industrial Switch, USB Support  
**SUBSTATION APPROVAL**

## Railway Certified Switches



**SEN-9425P-24V-RW**  
Unmanaged 4 x 10/100/1000 PoE+ & 1 x 10/100/1000 RJ45 & 2 x GbE SFP Industrial Switch, **RAILWAY APPROVAL**



**SEN-9428P-24V-RW**  
Unmanaged 8 x 10/100/1000 PoE+ & 2 x FX/GbE SFP Industrial Switch,  
**RAILWAY APPROVAL**



**SEN-9648P-24V-RW**  
Managed 8 x 10/100/1000 PoE+ & 4 x GbE SFP Industrial Switch, USB Support,  
**RAILWAY APPROVAL**

## DNV Certified Switches



**SEN-9648PM-24V**  
Managed 8 x 10/100/1000 PoE+ & 4 x GbE SFP Industrial Switch, USB Support,  
**DNV APPROVAL**

## NEMA TS2 Switches



**9060-4GP2GS-240W**  
L2+ Managed 4 x 10/100/1000 PoE++ & 2 x GbE SFP Switch, 240Watt PoE budget  
**NEMA TS2 APPROVAL**



**9060-4GP2GS-360W**  
L2+ Managed 4 x 10/100/1000 PoE++ & 2 x GbE SFP Switch, 360Watt PoE budget  
**NEMA TS2 APPROVAL**



**SEN-9648P-24V-SS**  
Managed 8 x 10/100/1000 PoE+ & 4 x GbE SFP Industrial Switch, USB Support  
**NEMA TS2 APPROVAL**

# PRODUCT APPLICATION



**Railway Surveillance**



**Substation Surveillance**

## Managed PoE+ Switches



| Model                                 |                             | HNS-8605P                      | HNS-8615P                      | 9060-4GP2GS                          | 9560-16GP4XS                    | INS-8624P                       | IEN-8608PA-24V                  |
|---------------------------------------|-----------------------------|--------------------------------|--------------------------------|--------------------------------------|---------------------------------|---------------------------------|---------------------------------|
| Interface                             | RJ45                        | 1 x 10/100/1000                | 1 x 10/100/1000                | -                                    | -                               | -                               | -                               |
|                                       | PoE                         | 4 x 10/100/1000 PoE            | 4 x 10/100/1000                | 4 x 10/100/1000                      | 16 x 10/100/1000                | 4 x 10/100/1000                 | 8 x 10/100/1000                 |
|                                       | SFP                         | -                              | 1 x FX/GbE                     | 2 x GbE                              | 4 x 1G/10G SFP+                 | 2 x FX/GbE                      | -                               |
|                                       | Console                     | -                              | -                              | 1                                    | 1                               | -                               | 1                               |
|                                       | USB                         | -                              | -                              | Y                                    | Y                               | -                               | Y                               |
| Hardware                              | Jumbo Frame (Bytes)         | 10K                            | 10K                            | 10K                                  | 12K                             | 10K                             | 10K                             |
|                                       | MAC Entries                 | 8K                             | 8K                             | 16K                                  | 16K                             | 8K                              | 16K                             |
|                                       | Automatic MDI/MDI-X         | Y                              | Y                              | Y                                    | -                               | Y                               | Y                               |
|                                       | Switching Fabric            | 10Gbps                         | 12Gbps                         | 12Gbps                               | 112Gbps                         | 12Gbps                          | 16Gbps                          |
|                                       | Flow Control                | Y                              | Y                              | Y                                    | Y                               | Y                               | Y                               |
|                                       | Surge Protection            | Y                              | Y                              | Y                                    | Y                               | Y                               | Y                               |
|                                       | ESD Protection              | Y                              | Y                              | Y                                    | Y                               | Y                               | Y                               |
|                                       | Reverse Polarity Protection | Y                              | Y                              | Y                                    | Y                               | Y                               | Y                               |
| Power                                 | Over Current Protection     | Y                              | Y                              | Y                                    | Y                               | Y                               | Y                               |
|                                       | DC Power Input              | 48 ~ 57VDC                     | 48 ~ 57VDC                     | 48 ~ 57VDC                           | 48 ~ 57VDC                      | 48 ~ 57VDC                      | 24 ~ 57VDC                      |
|                                       | Redundant Power             | Y                              | Y                              | Y                                    | Y                               | Y                               | Y                               |
|                                       | Alarm Contact               | Y                              | Y                              | Y                                    | Y                               | Y                               | Y                               |
|                                       | Power Isolation             | Y                              | Y                              | Y                                    | Y                               | Y                               | Y                               |
|                                       | System Power Consumption    | 10W                            | 10W                            | 20W                                  | 22W                             | 10W                             | 15W                             |
| Industrial Standards & Certifications | PoE Power Budget            | 120W                           | 120W                           | 240W-I: 240 Watt<br>360W-I: 360 Watt | 240W                            | 120W                            | 240W/48V<br>120W/24V            |
|                                       | FCC Part 15, CE             | Y                              | Y                              | Y                                    | Y                               | Y                               | Y                               |
|                                       | Shock Test                  | Y                              | Y                              | Y                                    | Y                               | Y                               | Y                               |
|                                       | Freefall Test               | Y                              | Y                              | Y                                    | Y                               | Y                               | Y                               |
| Installation & operation information  | Vibration Test              | Y                              | Y                              | Y                                    | Y                               | Y                               | Y                               |
|                                       | Dimensions (WxHxD)          | 31 x 136.3 x 105 mm            | 31 x 136.3 x 105 mm            | 50 x 161.5 x 119.9 mm                | 100 x 160 x 140 mm              | 57.3 x 175 x 126.4 mm           | 57.3 x 175 x 126.4 mm           |
|                                       | Weight                      | 500g                           | 515g                           | 970g                                 | 1,295g                          | 795g                            | 955g                            |
|                                       | Housing                     | Metal, IP40                    | Metal, IP40                    | Aluminum, IP30                       | Aluminum, IP30                  | Aluminum, IP40                  | Aluminum, IP40                  |
|                                       | Mounting Kit                | DIN-Rail                       | DIN-Rail                       | DIN-Rail                             | DIN-Rail                        | DIN-Rail                        | DIN-Rail                        |
|                                       | Operating Temperature       | -10°C ~ 60°C<br>(14°F ~ 140°F) | -10°C ~ 60°C<br>(14°F ~ 140°F) | -40°C ~ 75°C<br>(-40°F ~ 167°F)      | -40°C ~ 70°C<br>(-40°F ~ 158°F) | -40°C ~ 75°C<br>(-40°F ~ 167°F) | -40°C ~ 75°C<br>(-40°F ~ 167°F) |

## Managed PoE+ Switches



| Model                                 |                             | IEN-8608PA                      | IEN-8648PA-24V                  | IEN-8648PA                      | 9005-16GP2GS                                                                                    | 9005-24GP2GS                                                                                    |
|---------------------------------------|-----------------------------|---------------------------------|---------------------------------|---------------------------------|-------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|
| Interface                             | PoE                         | 8 x 10/100/1000                 | 8 x 10/100/1000                 | 8 x 10/100/1000                 | 16 x 10/100/1000                                                                                | 24 x 10/100/1000                                                                                |
|                                       | SFP                         | -                               | 4 x GbE                         | 4 x GbE                         | 2 x FX/GbE                                                                                      | 2 x FX/GbE                                                                                      |
|                                       | Console                     | 1                               | 1                               | 1                               | 1                                                                                               | 1                                                                                               |
|                                       | USB                         | Y                               | Y                               | Y                               | -                                                                                               | -                                                                                               |
| Hardware                              | Jumbo Frame (Bytes)         | 10K                             | 10K                             | 10K                             | 10K                                                                                             | 10K                                                                                             |
|                                       | MAC Entries                 | 16K                             | 16K                             | 16K                             | 8K                                                                                              | 8K                                                                                              |
|                                       | Automatic MDI/MDI-X         | Y                               | Y                               | Y                               | Y                                                                                               | Y                                                                                               |
|                                       | Switching Fabric            | 16Gbps                          | 24Gbps                          | 24Gbps                          | 36Gbps                                                                                          | 52Gbps                                                                                          |
|                                       | Flow Control                | Y                               | Y                               | Y                               | Y                                                                                               | Y                                                                                               |
|                                       | Surge Protection            | Y                               | Y                               | Y                               | Y                                                                                               | Y                                                                                               |
|                                       | ESD Protection              | Y                               | Y                               | Y                               | Y                                                                                               | Y                                                                                               |
|                                       | Reverse Polarity Protection | Y                               | Y                               | Y                               | Y                                                                                               | Y                                                                                               |
| Power                                 | Over Current Protection     | Y                               | Y                               | Y                               | Y                                                                                               | Y                                                                                               |
|                                       | DC Power Input              | 48 ~ 57VDC                      | 24 ~ 57VDC                      | 48 ~ 57VDC                      | 48 ~ 57VDC /<br>100 ~ 240VAC                                                                    | 48 ~ 57VDC /<br>100 ~ 240VAC                                                                    |
|                                       | Redundant Power             | Y                               | Y                               | Y                               | Y                                                                                               | Y                                                                                               |
|                                       | Alarm Contact               | Y                               | Y                               | Y                               | Y                                                                                               | Y                                                                                               |
|                                       | Power Isolation             | -                               | Y                               | -                               | Y                                                                                               | Y                                                                                               |
|                                       | System Power Consumption    | 15W                             | 18W                             | 18W                             | 20W                                                                                             | 20W                                                                                             |
| Industrial Standards & Certifications | PoE Power Budget            | 240W                            | 240W/48V<br>120W/24V            | 240W                            | 330W / AC / 50°C<br>260W / AC / 60°C<br>480W / DC / 75°C                                        | 330W / AC / 50°C<br>260W / AC / 60°C<br>685W / DC / 75°C                                        |
|                                       | FCC Part 15, CE             | Y                               | Y                               | Y                               | Y                                                                                               | Y                                                                                               |
|                                       | Shock Test                  | Y                               | Y                               | Y                               | Y                                                                                               | Y                                                                                               |
|                                       | Freefall Test               | Y                               | Y                               | Y                               | Y                                                                                               | Y                                                                                               |
| Installation & operation information  | Vibration Test              | Y                               | Y                               | Y                               | Y                                                                                               | Y                                                                                               |
|                                       | Dimensions (WxHxD)          | 57.3 x 175 x 126.4 mm           | 57.3 x 175 x 126.4 mm           | 57.3 x 175 x 126.4 mm           | 40 x 44 x 284 mm                                                                                | 40 x 44 x 284 mm                                                                                |
|                                       | Weight                      | 955g                            | 1,005g                          | 1,005g                          | 4kg                                                                                             | 4kg                                                                                             |
|                                       | Housing                     | Aluminum, IP40                  | Aluminum, IP40                  | Aluminum, IP40                  | Metal, IP30                                                                                     | Metal, IP30                                                                                     |
|                                       | Mounting Kit                | DIN-Rail                        | DIN-Rail                        | DIN-Rail                        | DIN-Rail                                                                                        | DIN-Rail                                                                                        |
|                                       | Operating Temperature       | -40°C ~ 75°C<br>(-40°F ~ 167°F) | -40°C ~ 75°C<br>(-40°F ~ 167°F) | -40°C ~ 75°C<br>(-40°F ~ 167°F) | DC version:<br>-40°C ~ 75°C<br>(-40°F ~ 167°F)<br>AC version:<br>-10°C ~ 60°C<br>(14°F ~ 140°F) | DC version:<br>-40°C ~ 75°C<br>(-40°F ~ 167°F)<br>AC version:<br>-10°C ~ 60°C<br>(14°F ~ 140°F) |

## Unmanaged PoE+ Switches



| Model                                 |                             | HNS-8405P                      | HNS-8415P                      | IEN-8205P-24V                  | INS-8224P                      |
|---------------------------------------|-----------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| Interface                             | RJ45                        | 1 x 10/100/1000                | 1 x 10/100/1000                | 1 x 10/100/1000                | -                              |
|                                       | PoE                         | 4 x 10/100/1000                | 4 x 10/100/1000                | 4 x 10/100/1000                | 4 x 10/100/1000                |
|                                       | SFP                         | -                              | 1 x GbE                        | -                              | 2 x GbE                        |
| Hardware                              | Jumbo Frame (Bytes)         | 10K                            | 10K                            | 10K                            | 10K                            |
|                                       | MAC Entries                 | 8K                             | 8K                             | 8K                             | 8K                             |
|                                       | Automatic MDI/MDI-X         | Y                              | Y                              | Y                              | Y                              |
|                                       | Switching Fabric            | 10Gbps                         | 12Gbps                         | 10Gbps                         | 12Gbps                         |
|                                       | Flow Control                | Y                              | Y                              | Y                              | Y                              |
|                                       | Surge Protection            | Y                              | Y                              | Y                              | Y                              |
|                                       | ESD Protection              | Y                              | Y                              | Y                              | Y                              |
|                                       | Reverse Polarity Protection | Y                              | Y                              | Y                              | Y                              |
| Power                                 | Over Current Protection     | Y                              | Y                              | Y                              | Y                              |
|                                       | DC Power Input              | 48 ~ 57VDC                     | 48 ~ 57VDC                     | 24 ~ 57VDC                     | 48 ~ 57VDC                     |
|                                       | Redundant Power             | Y                              | Y                              | Y                              | Y                              |
|                                       | Alarm Contact               | Y                              | Y                              | -                              | Y                              |
|                                       | Power Isolation             | Y                              | Y                              | Y                              | Y                              |
|                                       | System Power Consumption    | 9W                             | 10W                            | 14W                            | 10W                            |
|                                       | PoE Power Budget            | 120W                           | 120W                           | 120W                           | 120W/48V                       |
| Industrial Standards & Certifications | FCC Part 15, CE             | Y                              | Y                              | Y                              | Y                              |
|                                       | Shock Test                  | Y                              | Y                              | Y                              | Y                              |
|                                       | Freefall Test               | Y                              | Y                              | Y                              | Y                              |
|                                       | Vibration Test              | Y                              | Y                              | Y                              | Y                              |
| Installation & operation information  | Dimensions (WxHxD)          | 31 x 136.3 x 105 mm            | 31 x 136.3 x 105 mm            | 50 x 160 x 120 mm              | 50 x 160 x 120 mm              |
|                                       | Weight                      | 500g                           | 515g                           | 750g                           | 696g                           |
|                                       | Housing                     | Metal, IP40                    | Metal, IP40                    | Metal, IP40                    | Metal, IP40                    |
|                                       | Mounting Kit                | DIN-Rail                       | DIN-Rail                       | DIN-Rail                       | DIN-Rail                       |
|                                       | Operating Temperature       | -10°C ~ 60°C<br>(14°F ~ 140°F) | -10°C ~ 60°C<br>(14°F ~ 140°F) | -10°C ~ 60°C<br>(14°F ~ 140°F) | -10°C ~ 60°C<br>(14°F ~ 140°F) |

## Unmanaged PoE+ Switches



| Model                                 |                             | IEN-8225P-24V                  | 7160-7GP1G-24V          | INS-8424P                       |
|---------------------------------------|-----------------------------|--------------------------------|-------------------------|---------------------------------|
| Interface                             | RJ45                        | 1 x 10/100/1000                | 1 x 10/100/1000         | -                               |
|                                       | PoE                         | 4 x 10/100/1000                | 7 x 10/100/1000         | 4 x 10/100/1000                 |
|                                       | SFP                         | 2 x GbE                        | -                       | 2 x GbE                         |
| Hardware                              | Jumbo Frame (Bytes)         | 10K                            | 9K                      | 10K                             |
|                                       | MAC Entries                 | 8K                             | 4K                      | 8K                              |
|                                       | Automatic MDI/MDI-X         | Y                              | Y                       | Y                               |
|                                       | Switching Fabric            | 14Gbps                         | 14Gbps                  | 12Gbps                          |
|                                       | Flow Control                | Y                              | Y                       | Y                               |
|                                       | Surge Protection            | Y                              | Y                       | Y                               |
|                                       | ESD Protection              | Y                              | Y                       | Y                               |
|                                       | Reverse Polarity Protection | Y                              | Y                       | Y                               |
| Power                                 | Over Current Protection     | Y                              | Y                       | Y                               |
|                                       | DC Power Input              | 24 ~ 57VDC                     | 24 ~ 57VDC              | 48 ~ 57VDC                      |
|                                       | Redundant Power             | Y                              | Y                       | Y                               |
|                                       | Alarm Contact               | -                              | Y                       | Y                               |
|                                       | Power Isolation             | Y                              | Y                       | Y                               |
|                                       | System Power Consumption    | 14W                            | 17W                     | 10W                             |
|                                       | PoE Power Budget            | 120W                           | 210W/48V, 120W/24V      | 120W                            |
| Industrial Standards & Certifications | FCC Part 15, CE             | Y                              | Y                       | Y                               |
|                                       | Shock Test                  | Y                              | Y                       | Y                               |
|                                       | Freefall Test               | Y                              | Y                       | Y                               |
|                                       | Vibration Test              | Y                              | Y                       | Y                               |
| Installation & operation information  | Dimensions (WxHxD)          | 50 x 160 x 120 mm              | 50 x 160 x 120 mm       | 57.3 x 175 x 126.4 mm           |
|                                       | Weight                      | 780g                           | 1,033g                  | 795g                            |
|                                       | Housing                     | Metal, IP40                    | Metal, IP40             | Aluminum, IP40                  |
|                                       | Mounting Kit                | DIN-Rail                       | DIN-Rail                | DIN-Rail                        |
|                                       | Operating Temperature       | -10°C ~ 60°C<br>(14°F ~ 140°F) | -10°C~60°C (14°F~140°F) | -40°C ~ 70°C<br>(-40°F ~ 158°F) |

## Certified PoE+ Switches



|                                       |                             | Unmanaged                    |                       |                        |                       |
|---------------------------------------|-----------------------------|------------------------------|-----------------------|------------------------|-----------------------|
| Model                                 |                             | SEN-9425P-24V-SS             | SEN-9425P-24V-RW      | SEN-9428P-24V-SS       | SEN-9428P-24V-RW      |
| Interface                             | RJ45                        | 1 x 10/100/1000              | 1 x 10/100/1000       | -                      | -                     |
|                                       | PoE                         | 4 x 10/100/1000              | 4 x 10/100/1000       | 8 x 10/100/1000        | 8 x 10/100/1000       |
|                                       | SFP                         | 2 x GbE                      | 2 x GbE               | 2 x GbE                | 2 x GbE               |
|                                       | Console                     | -                            | -                     | -                      | -                     |
|                                       | USB                         | -                            | -                     | -                      | -                     |
| Hardware                              | Jumbo Frame (Bytes)         | 10K                          | 10K                   | 10K                    | 10K                   |
|                                       | MAC Entries                 | 8K                           | 8K                    | 8K                     | 8K                    |
|                                       | Automatic MDI/MDI-X         | Y                            | Y                     | Y                      | Y                     |
|                                       | Switching Fabric            | 14Gbps                       | 14Gbps                | 20Gbps                 | 20Gbps                |
|                                       | Flow Control                | Y                            | Y                     | Y                      | Y                     |
|                                       | Surge Protection            | Y                            | Y                     | Y                      | Y                     |
|                                       | ESD Protection              | Y                            | Y                     | Y                      | Y                     |
|                                       | Reverse Polarity Protection | Y                            | Y                     | Y                      | Y                     |
|                                       | Over Current Protection     | Y                            | Y                     | Y                      | Y                     |
| Power                                 | DC Power Input              | 24 ~ 57VDC                   | 24 ~ 57VDC            | 24 ~ 57VDC             | 24 ~ 57VDC            |
|                                       | Redundant Power             | Y                            | Y                     | Y                      | Y                     |
|                                       | Alarm Contact               | -                            | -                     | Y                      | Y                     |
|                                       | Power Isolation             | Y                            | Y                     | Y                      | Y                     |
|                                       | System Power Consumption    | 14W                          | 14W                   | 13W                    | 13W                   |
|                                       | PoE Power Budget            | 120W                         | 120W                  | 240W/48V, 120W/24V     | 240W/48V, 120W/24V    |
| Industrial Standards & Certifications | FCC Part 15, CE             | Y                            | Y                     | Y                      | Y                     |
|                                       | Shock Test                  | Y                            | Y                     | Y                      | Y                     |
|                                       | Freefall Test               | Y                            | Y                     | Y                      | Y                     |
|                                       | Vibration Test              | Y                            | Y                     | Y                      | Y                     |
| Installation & operation information  | Dimensions (WxHxD)          | 50 x 161.5 x 119.9 mm        | 50 x 161.5 x 119.9 mm | 50 x 161.5 x 119.9 mm  | 50 x 161.5 x 119.9 mm |
|                                       | Weight                      | 869g                         | 869g                  | 930g                   | 930g                  |
|                                       | Housing                     | Aluminum, IP30               | Aluminum, IP30        | Aluminum, IP30         | Aluminum, IP30        |
|                                       | Mounting Kit                | DIN-Rail                     | DIN-Rail              | DIN-Rail               | DIN-Rail              |
|                                       | Operating Temperature       | -40°C ~ 75°C (-40°F ~ 167°F) |                       |                        |                       |
| Certification                         | Approval                    | UL, IEEE 1613, IEC 61850-3   | EN 50155, EN 50121-4  | IEEE 1613, IEC 61850-3 | EN 50155, EN 50121-4  |

## Certified PoE+ Switches



|                                       |                             | Managed                          |                       |                       |
|---------------------------------------|-----------------------------|----------------------------------|-----------------------|-----------------------|
| Model                                 |                             | SEN-9648P-24V-SS                 | SEN-9648P-24V-RW      | SEN-9648PM-24V        |
| Interface                             | RJ45                        | -                                | -                     | -                     |
|                                       | PoE                         | 8 x 10/100/1000                  | 8 x 10/100/1000       | 8 x 10/100/1000       |
|                                       | SFP                         | 4 x GbE                          | 4 x GbE               | 4 x GbE               |
|                                       | Console                     | 1                                | 1                     | 1                     |
|                                       | USB                         | Y                                | Y                     | Y                     |
| Hardware                              | Jumbo Frame (Bytes)         | 10K                              | 10K                   | 10K                   |
|                                       | MAC Entries                 | 16K                              | 16K                   | 16K                   |
|                                       | Automatic MDI/MDI-X         | Y                                | Y                     | Y                     |
|                                       | Switching Fabric            | 24Gbps                           | 24Gbps                | 24Gbps                |
|                                       | Flow Control                | Y                                | Y                     | Y                     |
|                                       | Surge Protection            | Y                                | Y                     | Y                     |
|                                       | ESD Protection              | Y                                | Y                     | Y                     |
|                                       | Reverse Polarity Protection | Y                                | Y                     | Y                     |
|                                       | Over Current Protection     | Y                                | Y                     | Y                     |
| Power                                 | DC Power Input              | 24 ~ 57VDC                       | 24 ~ 57VDC            | 24 ~ 57VDC            |
|                                       | Redundant Power             | Y                                | Y                     | Y                     |
|                                       | Alarm Contact               | Y                                | Y                     | Y                     |
|                                       | Power Isolation             | Y                                | Y                     | Y                     |
|                                       | System Power Consumption    | 18W                              | 18W                   | 18W                   |
|                                       | PoE Power Budget            | 240W/48V, 120W/24V               | 240W/48V, 120W/24V    | 240W/48V, 120W/24V    |
| Industrial Standards & Certifications | FCC Part 15, CE             | Y                                | Y                     | Y                     |
|                                       | Shock Test                  | Y                                | Y                     | Y                     |
|                                       | Freefall Test               | Y                                | Y                     | Y                     |
|                                       | Vibration Test              | Y                                | Y                     | Y                     |
| Installation & operation information  | Dimensions (WxHxD)          | 50 x 161.5 x 119.9 mm            | 50 x 161.5 x 119.9 mm | 50 x 161.5 x 119.9 mm |
|                                       | Weight                      | 955g                             | 955g                  | 955g                  |
|                                       | Housing                     | Aluminum, IP30                   | Aluminum, IP30        | Aluminum, IP30        |
|                                       | Mounting Kit                | DIN-Rail                         | DIN-Rail              | DIN-Rail              |
|                                       | Operating Temperature       | -40°C ~ 75°C (-40°F ~ 167°F)     |                       |                       |
| Certification                         | Approval                    | UL, IEEE 1613, IEC 61850-3, NEMA | EN 50155, EN 50121-4  | DNV                   |

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