



INDUSTRIAL NETWORKING BROCHURE

Engineered and
manufactured
in Taiwan

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Industrial Ethernet



Introduction

The latest trend in Industrial Automation is the vision of "Industry 4.0" that was originated by the German government to create the "Smart Factory" based on the concept of computerized manufacturing. This recent vision of industrial advancement involves creation of the cyber-physical system (CPS). The CPS closely links and coordinates the physical components in the real world with the software or computational components in the cyber world to create a mechanism that is controlled and monitored by computer-based algorithms. CPS requires a lot of data exchange among various components in the system. The smart factory with the cyber-physical system can be constructed with the recent technologies such as the Internet of Things (IoT) and the cloud computing. It is envisaged that by the end of the twenty-first century, the smart factory will have more than a billion connected devices. This, therefore, raises a lot of concern on the reliability and the security of network communications.

While Ethernet based networks became the backbone of Industrial Automation, Serial Communication remains relevant to connect

legacy devices with the latest equipment. Wireless-based communication is becoming a more reliable and trustable solution not only for application where physical wiring is a problem, but also for customer who require minimal network setup and ease of use.

ATOP is a leading company into the design and manufacture of Industrial networking devices. We have an entire suite of offerings for both wired and wireless networking. Our range extends from entry level products to high level products. ATOP offers reliable, secure, and cost-effective solutions for all demanding applications. Our Industrial Ethernet switches with additional advanced features like security, redundancy (through RSTP, ERPS, or MRP Rings), QoS management, VLAN management, LACP link aggregation/port trunking, and Layer-3 routing, provides a backbone to ensure that all information will go through reliably and securely.





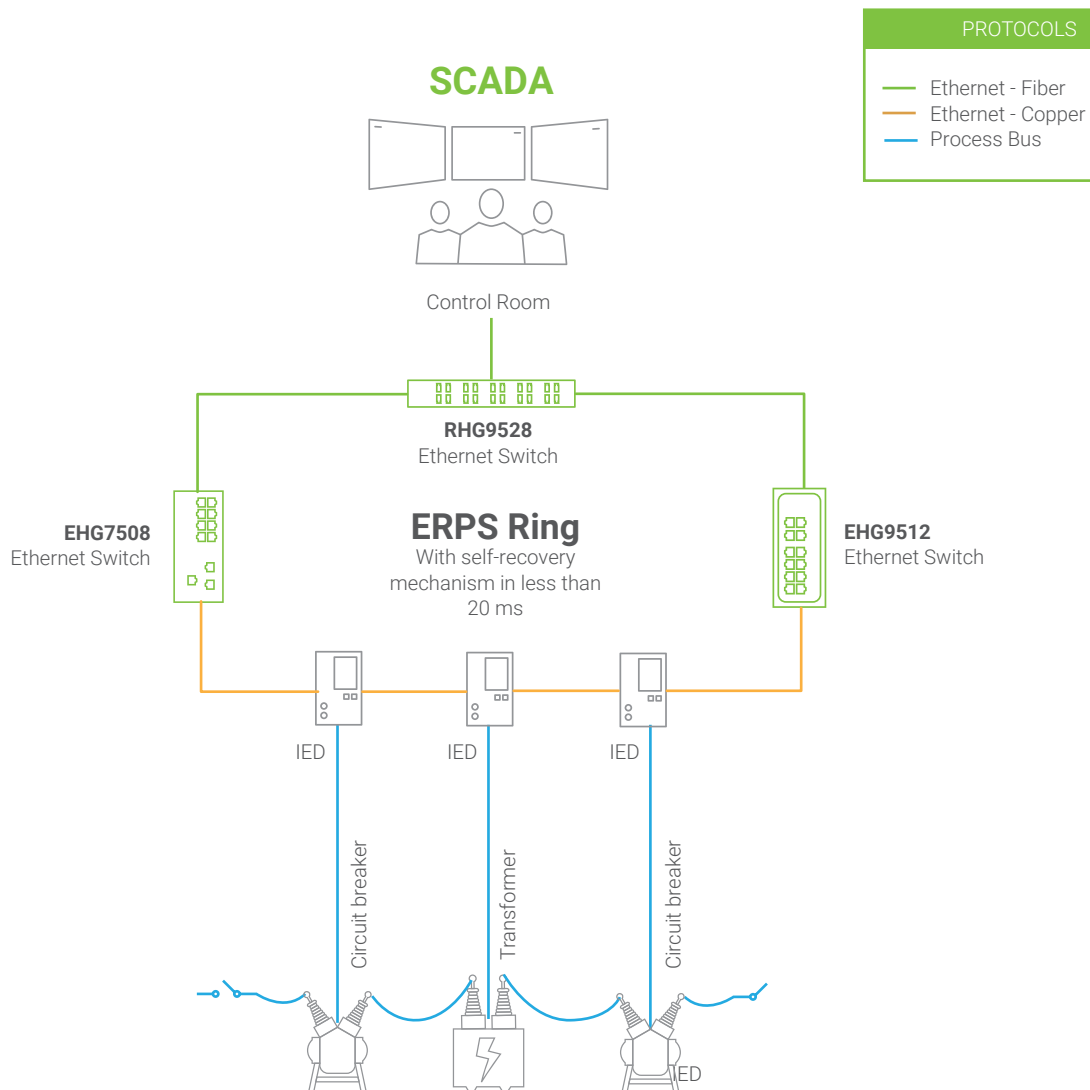
ATOP's added value

a) Reliability

Modern day factories cannot afford any downtime. Unreliable networks lead to delay in production which is not acceptable in the Industry 4.0 era. These events unfortunately do happen.

ATOP's products that are very reliable with 25 -years MTBF (mean-time-between-failures) helps in reducing the risk. It's not enough. To further minimize the event of downtime we have products that provide redundancy features. In an event of link or device failure, ATOP's Smart-Redundancy Feature detects the failure and relay's the cause of the failure back to the control center and automatically recover from such failure thereby providing continuous operation.

Whether a network switch fails or a communication link gets broken, ATOP's device with Ethernet Ring Protection Switching (ERPS), Rapid Spanning Tree Protocol (RSTP) and Media Redundancy Protocol (MRP) ring settings restores the operation and network connectivity instantly.



FEATURED PRODUCTS



EHG7508 : Industrial 8-Port PoE Managed Gigabit Switch (-20~70 °C)

- 8 10/100/1000 RJ45 ports or 1000 SFP slots
- maximum 8 x 30 W PoE ports (240W power budget)
- Profinet CC-B compatible; Ethernet/IP; ERPS, RSTP, STP, MRP Client redundancy;
- IEEE 1588v2 Hardware-assisted TC and many others



EHG9512 : IEC 61850-3 12-Port Managed Gigabit Switch (-40~85 °C)

- 8 x 10/100/1000 RJ45 ports and 4 Gigabit SFP uplink slots
- IEC 61850-3, IEEE 1613 certified
- UL/cUL/IEC(CB) 61010-2-201 certified
- IEEE 1588v2 Hardware-assisted TC; ERPS, RSTP, STP, MRP Client redundancy;



RHG9528 : IEC 61850-3 modular Managed Switch, max 24 Gigabit and 4 x 10 GbE ports (-40~85 °C)

- 3 x 8-port Gigabit module slots and 4x 1 or 10 Gigabit SFP uplink slots
- Available modules: 8 x 10/100/1000 RJ45 or 8 x 100/1000 SFP
- IEC 61850-3, IEEE 1613, UL/cUL/IEC(CB) 61010-2-201 certified
- IEEE 1588v2 Hardware-assisted TC; ERPS, RSTP, STP, MRP Client redundancy;



b) Harsh Environments

Blast furnace? Sub-zero degree processing? No problem. ATOP's rugged top-of-the-line products are specifically designed to withstand the harshest environments.

With the fanless design and industrial grade components, selected ATOP products support applications from -40°C to +85°C while guaranteeing a long MTBF. This is achieved by having no moving parts which are usually the causes of breakdowns.

c) Electromagnetic Compatibility EMI/EMS

High-voltages and electromagnetic interferences in factories could be fatal if the devices that are installed are not properly shielded and isolated against electromagnetic susceptibility (EMS).

Without proper design of device and precaution against EMS, equipment breakdown could happen. For instance, if a 2,000-Volt surge is applied to the power supply unit, severe damages could be caused to the system. The devices should be also be designed in a way as to not interfere with the surrounding equipment by generating noise (EMI, Electromagnetic Interference).

ATOP devices are specifically designed with embedded isolation to withstand the harshest industrial-grade electromagnetic interference and susceptibility.

ATOP's devices confirm to the electromagnetic compatibility (EMC) Level 3 and Level 4 requirements and they are also compliant with the strictest regulations for susceptibility and interference such as UL61010 and EN61000-6-2 and EN61000-6-4.



d) Security/Encryption

Security of data in network is a very important issue in Industry 4.0. The more the devices that can be remotely controlled in smart factories the more is the vulnerability to various threats and malicious activities such as network penetration, taking over control of the system, and disrupting the manufacturing process.

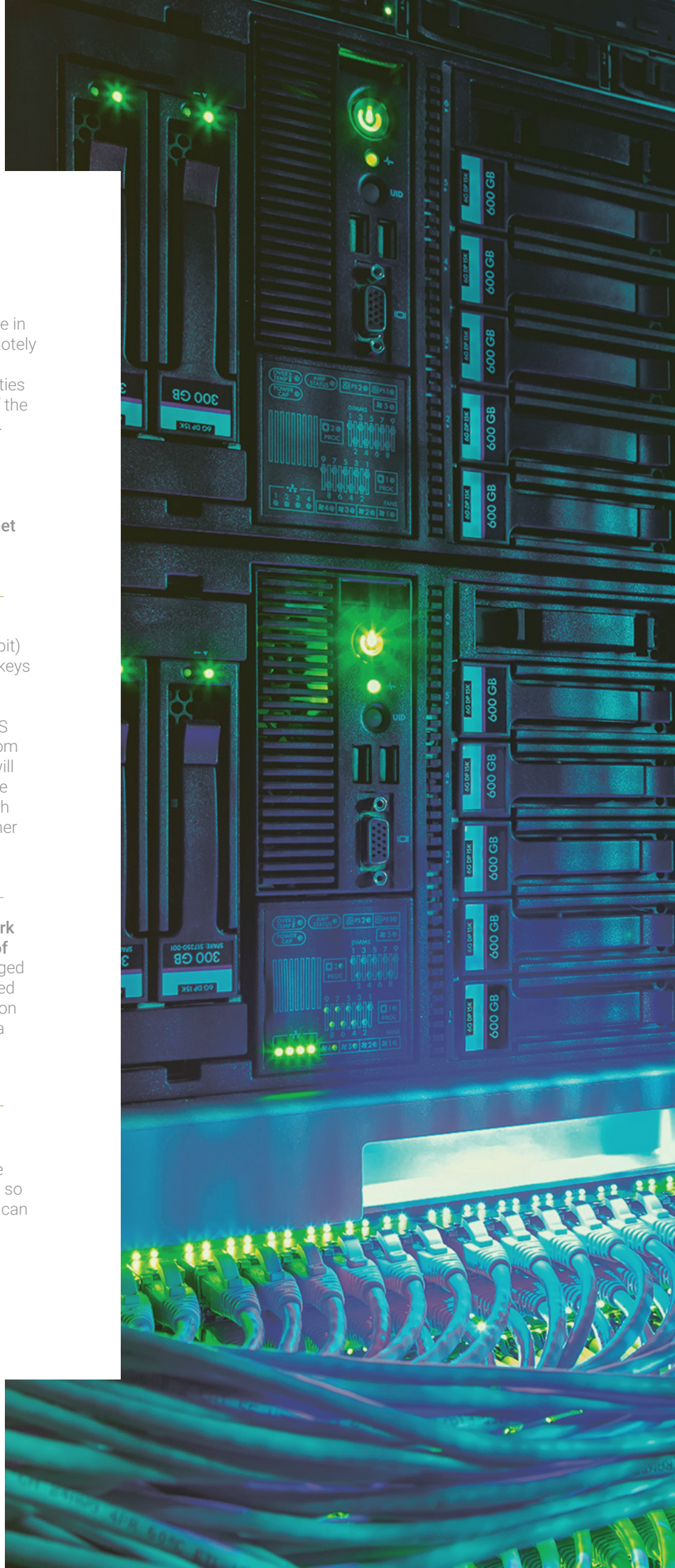
ATOP's security solutions provide seamless and cost-effective encrypted links for LANs through MACsec (IEEE Medium Access Control Security Standard, IEEE 802.1AE) and for WANs and Internet through IPsec (Internet Protocol Security) or OpenVPN.

MACsec or IEEE 802.1AE protocol enhances your network with hop-to-hop AES (128- or 192- or 256-bit) encryption and defines the way Public and Private keys are managed.

If both connected devices support MACsec, the authentication is auto-negotiated through a RADIUS server before establishing a secure connection. From that point on, all data transferred through the link will be encrypted at the source with a high performance computing hardware that guarantees full bandwidth utilization and decrypted at the other end. If the other end does not support the MACsec, the data will be transmitted without encryption.

ATOP is a pioneer in the field of security of network devices. We have introduced a whole new range of products. This includes, Secure L3 Routers, Managed L2 and L3 switches, and a cost-effective unmanaged smart and secure switch. With the 256-bit encryption managed through hardware our solutions provide a seamless experience and unprecedented performance.

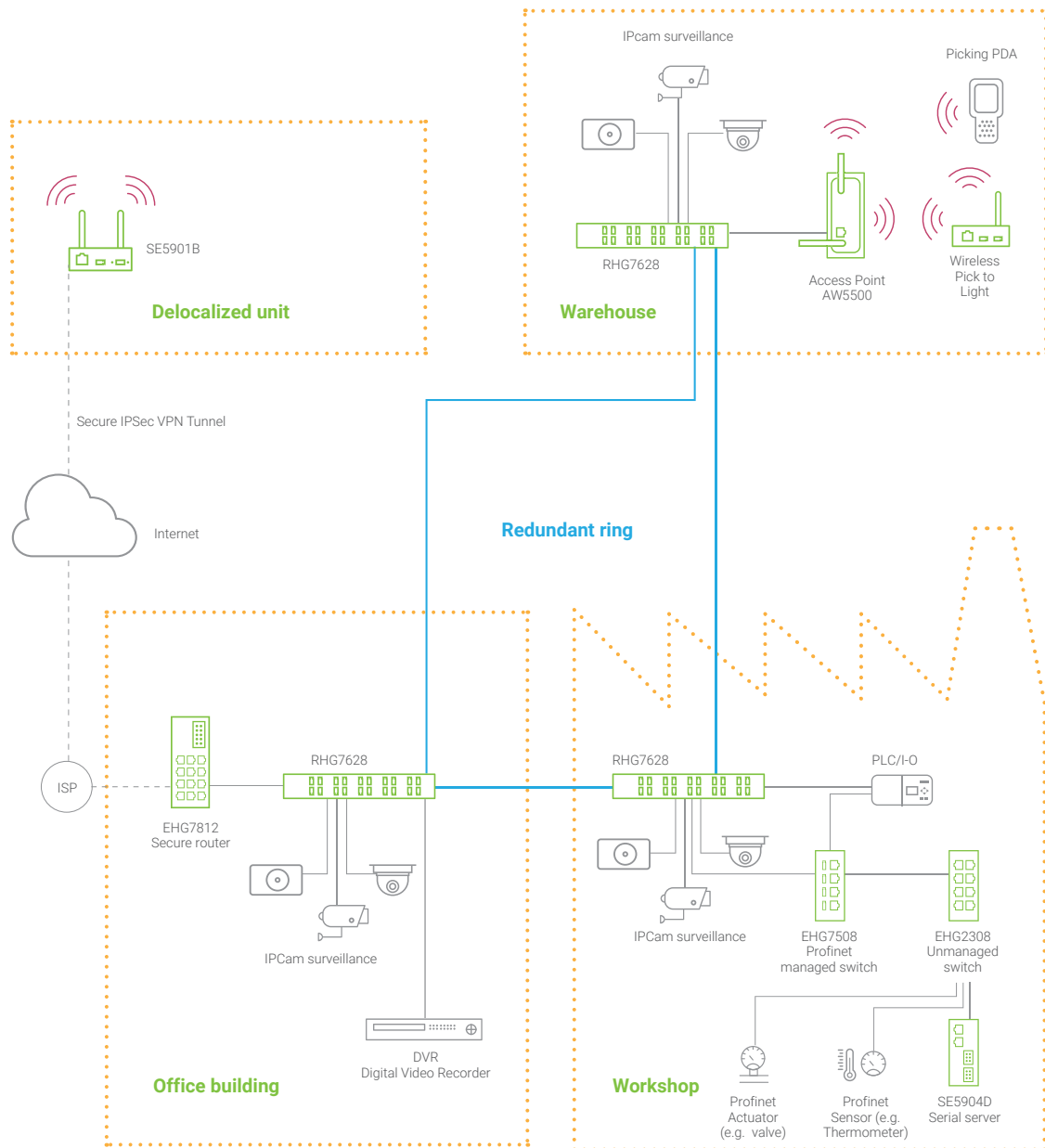
ATOP's Routers and Serial device servers provide embedded security measure through virtual private network (VPN) using IP security (IPSec) encryption so that all information going in and out of the devices can be properly protected from potential attacks.



e) Performance/Fast Responsiveness

Integration of legacy network equipment with new infrastructures always has problems on mismatch of speed or data throughput. **While the new technologies offer much wider bandwidth and have more and stricter requirements the legacy equipment are generally slow and do not have frequent data updates. ATOP managed to solve this problem in several ways.** For example, our new network device can autonomously poll data from legacy network device and store them in the internal memory until a master device running on the new protocol or on the new physical layer asks for an update. This helps in reducing bottlenecks and increases system performance.

...our Application Example



PROTOCOLS	
	Copper or Fiber Ethernet
	Wireless
	10 Gigabit Ethernet Fiber backbone

...more information on our Application Example



RHG7628 - Layer-3 Modular Gigabit Managed PoE Rack-Mount Switch

- Modular architecture for up to 24 Gigabit ports and 4x1 or 4x10 Gigabit Ethernet uplink SFP slots.
- Flexible configuration allows PoE, RJ45, SFP, secure RJ45-SFP ports to be embedded in one device.
- Up to 24 PoE 802.3af-802.3at ports, with maximum 720 W power budget
- -40~75 °C operational temperature.
- Profinet Conformance Class B compatible
- Redundancy through ERPS/ RSTP/MRP (client) protocols
- IEEE 1588v2 hardware-based transparent clock



EHG7508 - DIN-Rail 8-Port Managed Gigabit Ethernet PoE switch

- 8 Gigabit ports, in different RJ45/PoE/SFP configurations.
- Up to 8 802.3af 802.3at PoE ports allowing 240 W maximum PoE power Budget
- -20~70 °C operational temperature
- Profinet Conformance Class B compatible
- Redundancy through ERPS/RSTP rings and MRP (client).
- Redundant power supply and relay output.



EHG2308 - DIN-Rail 8-Port Unmanaged Gigabit Ethernet switch

- 8-Gigabit RJ45 ports
- -10~70 °C operational temperature
- Profinet packet prioritization
- UL/cUL listed
- Redundant power input



EHG7808/ EHG7812 - DIN-Rail 8/12-port Secure VPN Router and Secure Layer-3 Managed Switch

- Total 8 or 12 Gigabit RJ45 ports or SFP slots
- 2 dedicated Gigabit WAN ports, with hardware-accelerated Encryption for VPN tunnels
- Up to 100 VPN tunnels, high performance
- 6 or 10 Gigabit secure ports with hw-based encryption, low latency, 99% throughput guaranteed
- Profinet Conformance Class B compatible
- -40~75 °C operational temperature. Redundant power supply and relay output.
- Redundancy through ERPS/ RSTP/MRP (client), IEEE 1588v2 hardware-based transparent clock



SE5901B - DIN-Rail 3G/4G LTE Industrial Serial Device Server

- One Gigabit RJ45 port
- One sw-selectable RS-485/232 serial port
- Battery Feature [opt] provides 10-15s additional power for alarm relay in case of power failure
- 2 Digital inputs / 2 Digital outputs [optional]
- -40~75 °C operational temperature



AW5500 - DIN-Rail IEEE 802.11 a/b/g/n high-performance Access Point

- IEEE 802.11 a/b/g/n radio, supporting 2 x 2 MIMO, 2.4 and 5.0 GHz
- One 10/100/1000 RJ45 Ethernet port
- -10~60 °C operational temperature
- Different operating mode and Topology Options (WDS Bridge and AP Client)

Entry Level Switches

Unmanaged Entry-Level Switches

ATOP's Entry Level DIN-Rail-mount unmanaged switches offer a reliable, robust, and cost-effective solution to most of the simple network topologies.

With IP30 rating, all of them are certified for Industrial EMC (EN61000-6-4 and EN61000-6-2). You can choose from plastic, steel or aluminium housing.

All models support redundant power-input for enhanced safety and DIN-Rail-mount, and can operate in temperatures ranging from -10 to 70 °C (except products with plastic that support 0 to 60 °C operating temperature).

Some selected products support Packet Prioritization for Profinet.

Our products range from 4 to 8 Fast Ethernet or Gigabit Ethernet ports and have both single-mode or multi-mode fiber-optic uplink. These products being unmanaged switches need no configuration efforts, power supply and Ethernet cables.



Unmanaged Fast-Ethernet Switches DIN-Rail mount Plastic Housing



SKU	Description	10/100 RJ45 ports	10/100 /1000 RJ45 ports	Fiber ports	Max PoE Ports	Additional features
	EH2005-Fm	5-Port Unmanaged Switch with Fiber Optics, plastic	4	-	1 multi-mode max 2 Km	-
	EH2005-Fs	5-Port Unmanaged Switch with Fiber Optics, plastic	4	-	1 Single-mode max 20 Km	-
	EH2006	6-Port Unmanaged Switch, Plastic	6	-	-	-


Unmanaged Fast-Ethernet Switches, DIN-Rail mount, Metal Housing



SKU	Description	10/100 RJ45 ports	SFP slots	Fiber ports	Max PoE Ports	Additional features
	EH2305-1Fm	4	-	1 (Multi-Mode) - max 2 Km	-	
	EH2305-1Fm	4	-	1 (single-mode) - max 20 Km	-	
	EH2306	6	-	-	-	
 	EH2308	8	-	-	-	
	EH2304-PR	4	-	-	-	Profinet packet prioritization, Profinet connectors
	EH2308-PR	8	-	-	-	Profinet packet prioritization, Profinet connectors

Unmanaged Gigabit Ethernet Switches, DIN-Rail mount, Metal Housing



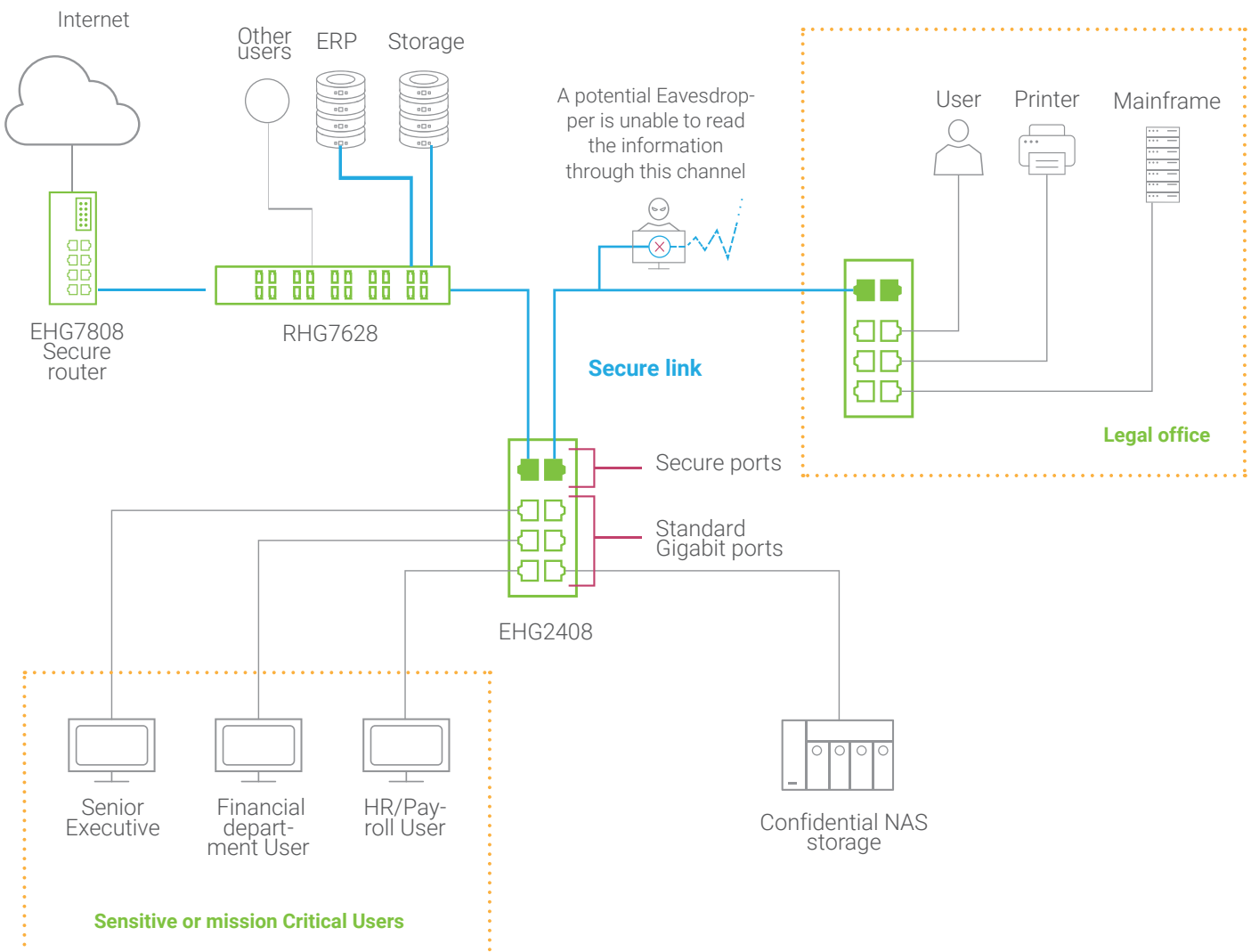
SKU	Description	10/100 RJ45 ports	10/100 /1000 ports	Fiber ports	Max PoE Ports	Additional features
	EHG2308	-	8	-	-	Profinet packet prioritization

Unmanaged Smart Secure Switches

This product is very useful if customers would like to secure an uplink towards core servers or throughout the backbone. ATOP's Gigabit Unmanaged Smart and Secure Switch is embedded with 6 x 10/100/1000 RJ45 ports and 2 x 10/100/1000 Secured RJ45 or SFP ports that can also work with non MACsec-capable devices.

The embedded CPU will handle a hassle-free key-negotiation with the host automatically. The user does not have to access the switch individually and key in any configurable parameter to get going, but it may change in any-moment the pre-shared key or the encryption mode.

This product is definitely the easiest and the most effective solution in order to bring security into your network.



PROTOCOLS	
—	Copper or Fiber Ethernet
—	Secure link

...more information on our Application Example

RHG7628 - Layer-3 Modular Gigabit Managed PoE Rack-Mount Switch



- Modular architecture for up to 24 Gigabit ports and 4x1 or 4x10 Gigabit Ethernet uplink SFP slots.
- Flexible configuration allows PoE, RJ45, SFP, secure RJ45-SFP ports to be embedded in one device.
- Up to 24 PoE 802.3af-802.3at ports, with maximum 720 W power budget
- -40~75 °C operational temperature.
- Profinet Conformance Class B compatible
- Redundancy through ERPS/ RSTP/MRP (client) protocols
- IEEE 1588v2 hardware-based transparent clock

EHG7808/ EHG7812 - DIN-Rail 8/12-port Secure VPN Router and Secure Layer-3 Managed Switch

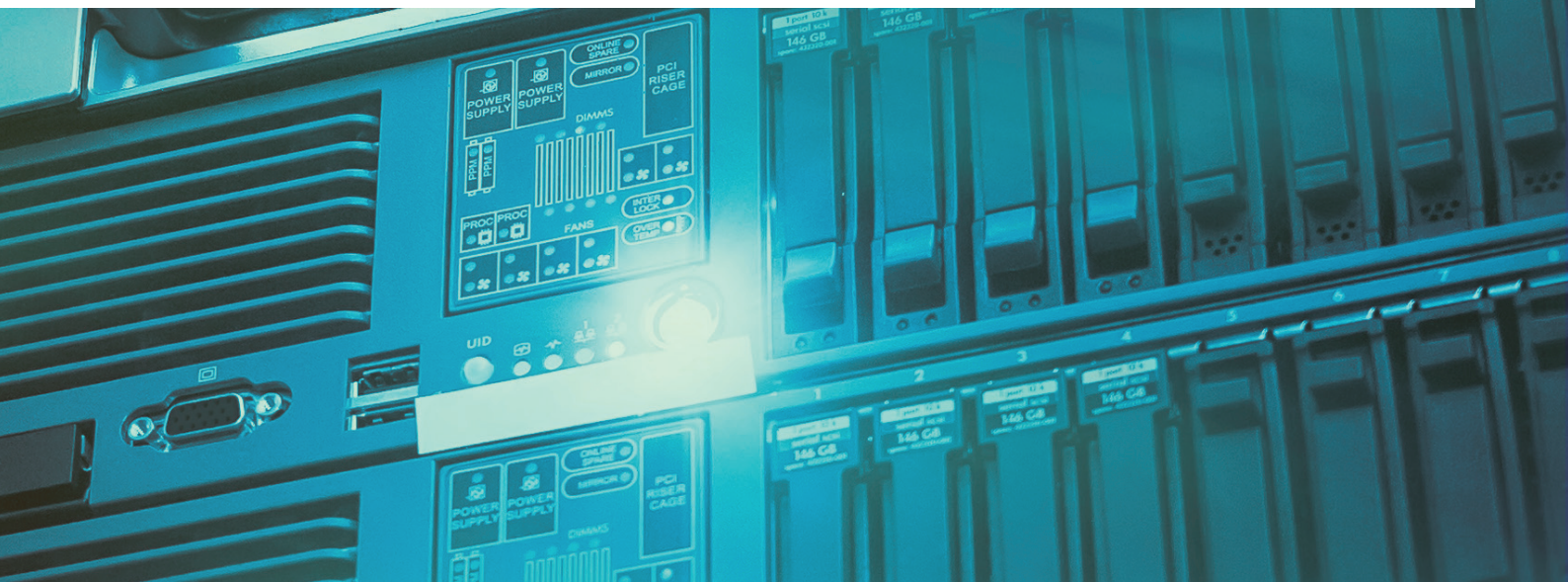


- Total 8 or 12 Gigabit RJ45 ports or SFP slots
- 2 dedicated Gigabit WAN ports, with hardware-accelerated Encryption for VPN tunnels
- Up to 100 VPN tunnels, high performance
- 6 or 10 Gigabit secure ports with hw-based encryption, low latency, 99% throughput guaranteed
- Profinet Conformance Class B compatible
- -40~75 °C operational temperature. Redundant power supply and relay output.
- Redundancy through ERPS/ RSTP/MRP (client), IEEE 1588v2 hardware-based transparent clock

EHG2408 - DIN-Rail 8-Port Smart Secure Unmanaged Gigabit switch




- 6-Gigabit non-Secure RJ45 ports
- 2-Gigabit Secure MACsec RJ45 ports or SFP slots
- Simple plug-and-play security
- -10~70 °C operational temperature
- Profinet packet prioritization
- UL/cUL listed
- Redundant power input



Unmanaged Gigabit Ethernet Secure Switches, DIN-Rail mount, Metal Housing

NEW
2017 Q1



SKU	Description	10/100 RJ45 ports	100 SFP slots	10/100 /1000 RJ45 ports	1000 SFP slots	Max PoE Ports	Additional features
	EHG2408	-	-	8 *	-	-	Prioritizes Profinet packets
	EHG2408-2SFP	-	-	6	2	-	Prioritizes Profinet packets

* The 2 uplink port out of the 8 ports available is MACsec capable


Unmanaged Gigabit PoE Switches

ATOP's Entry Level DIN-Rail mount unmanaged switches product line is enhanced with Power-over-Ethernet (PoE) and Gigabit SFP support. With IP30 rating, it guarantees the capability of operating at the temperature ranging from -10 to 70 °C and with embedded redundant-DC power input.

The capability of Power over Ethernet (PoE) and Gigabit speed are also embedded to ensure their suitability for simple industrial applications.

Unmanaged Gigabit Switches with PoE, DIN-Rail mount, Metal Housing



SKU	Description	10/100 RJ45 ports	100 SFP slots	10/100 /1000 RJ45 ports	1000 SFP slots	Max PoE Ports	Additional features
	EHG6308-4PoE	-	-	8	-	4	
	EHG6308-4PoE-4SFP	-	-	4	4	4	

Harsh Environments Switches

Introduction

ATOP's advanced DIN-Rail mount product line offers a range of **14 models with over 60 different configurations to choose from**. Our harsh environment switches are the best choice to support networks that are very demanding

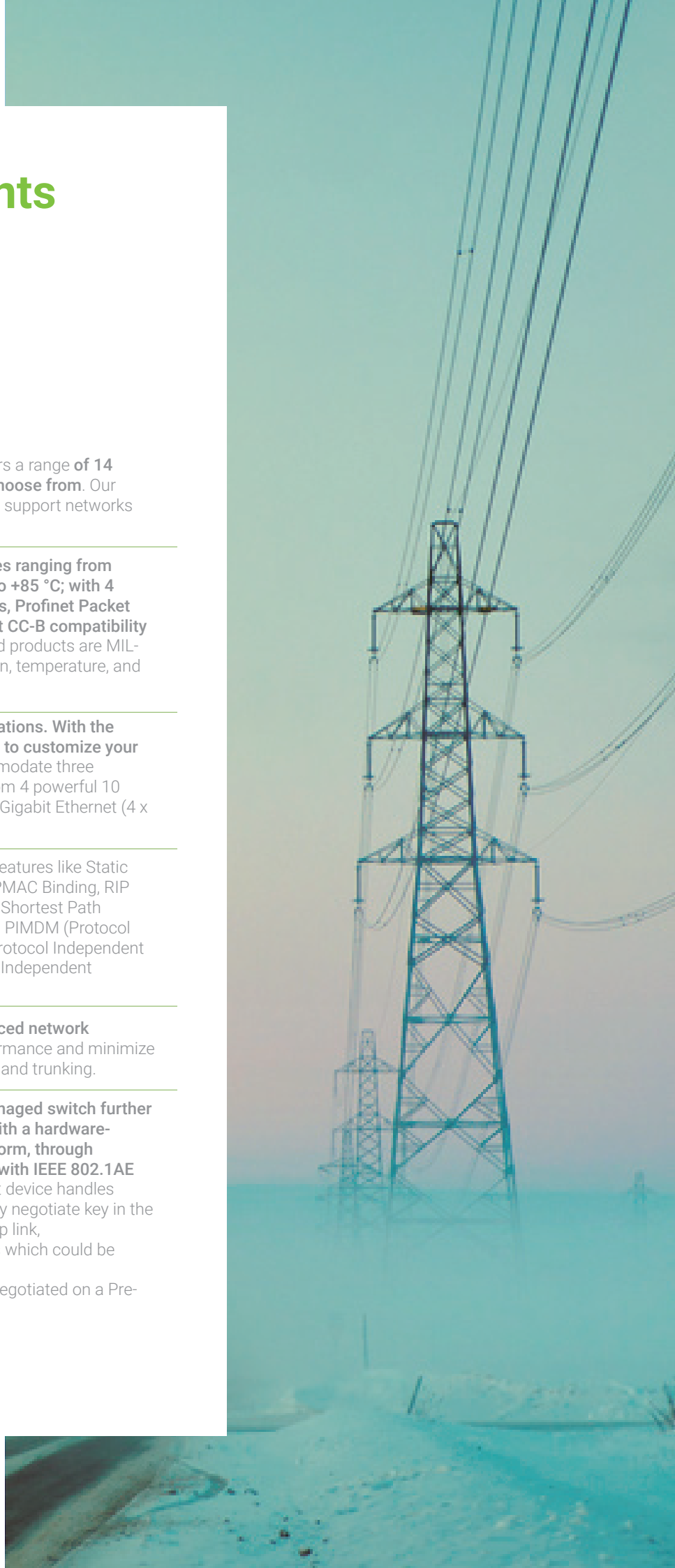
Our products support wide operating temperatures ranging from -20 to +70°C and many products supporting -40 to +85 °C; with 4 to 20 Fast Ethernet or Gigabit ports, Relay Outputs, Profinet Packet Prioritization for unmanaged switches and Profinet CC-B compatibility for managed switches. Additionally, some selected products are MIL-STD (Military Standard) certified for shock, vibration, temperature, and humidity.

In addition, we also provide Rack-mount configurations. With the modular architecture of the product, it is possible to customize your devices. The same hardware platform can accommodate three different modules that allows flexibly to choose from 4 powerful 10 Gigabit Ethernet (4 x 10GbE) SFP uplink ports or 4 Gigabit Ethernet (4 x 1GbE) SFP uplink ports.

ATOP's Layer-3 switch series provides advanced features like Static Routing, Dynamic Routing, RFC 2674 VLAN MIB, IPMAC Binding, RIP (Routing Information Protocol) v1/v2, OSPF (Open Shortest Path First), DVMRP (Distance Vector Multicast Routing), PIMDM (Protocol Independent Multicast – Dense Mode), PIM-SM (Protocol Independent Multicast – Sparse Mode) and PIM-SSM (Protocol Independent Multicast – Source-Specific Multicast).

ATOP's managed switches provide flexible advanced network management features to maximize network performance and minimize down-times, such as ERPS/RSTP ring, VLAN, QoS, and trunking.

For high level network security, **ATOP's Secure Managed switch further enhances all the functions of ATOP's L3 switch with a hardware-based high-performance intelligent security platform, through (128-,192-, or 256-bit) AES encryption combined with IEEE 802.1AE** also known as MACsec protocol. ATOP's intelligent device handles authentication of the node through a autonomously negotiate key in the RADIUS server, for establishing a secure hop-to-hop link, and automatically decrypt the incoming messages which could be addressed to non-MACsec capable devices. In case there is no RADIUS server, the Key will be negotiated on a Pre-Shared-Key base.



Unmanaged Harsh Environments Switches

ATOP's advanced unmanaged switches provide rugged and solid networking solutions for harsh-environment deployments with an easy "plug & play" installation.

The key features of this series are the availability of **5 to 10 Fast Ethernet or Gigabit Ethernet ports**, embedded **Power over Ethernet (PoE)** on selected models, and a variety of port configurations such as RJ45, SFP, and single- or multi-mode fiber optics. Additionally, the **Atex Zone 2 certification** makes this product suitable for using in well areas or mines with a high risk of explosion.

Unmanaged Gigabit Switches with/without PoE, DIN-Rail mount Metal Housing



Industrial
EMC

MILD-STD
810F



IP30
IEC60529

SKU	Description	10/100 /1000 RJ45 ports	1000 SFP slots	Max PoE Ports	Additional features
	EHG7305	5-Port Unmanaged Harsh-Env. Gigabit Atex Switch	5	-	-
	EHG7306-1SFP	6-Port Unmanaged Harsh-Env. Gigabit Atex switch with 1 SFP uplink	5	1	-
	EHG7307-2SFP	7-Port Unmanaged Harsh-Env. Gigabit Atex switch with 2 SFP uplink	5	2	-
	EHG7305-4PoE	5-Port Unmanaged Harsh-Env. Gigabit Atex switch with 4 PoE Ports	5	-	4
	EHG7306-4PoE-1SFP	6-Port Unmanaged Harsh-Env. Gigabit Atex switch with 1 SFP uplink and 4 PoE Ports	5	1	4
	EHG7307-4PoE-2SFP	7-Port Unmanaged Harsh-Env. Gigabit Atex switch with 2 SFP uplink and 4 PoE Ports	5	2	4
					Atex Zone 2 certified



Layer-2 Managed DIN-Rail Switches

ATOP's advanced Layer-2 (L2) managed Ethernet switches for harsh environments provide rugged and solid solutions for managing advanced networks. This series of switches can introduce a high degree of link redundancy, flow control, and configurability to your network. All models in this series are designed to withstand strictest EMC requirements of compliance level 3 and level 4. Our high-performance components guarantee a real-time packet switching, even on full load.

They are available in Fast-Ethernet and Full-Gigabit Ethernet versions with configurations of 4 to 20 ports, with RJ45 or SFP connector, and optional PoE support. ATOP's L2 managed switch family supports:

- a. IEEE802.1d for Spanning Tree Protocol (STP)
- b. IEEE802.1w/ IEEE802.1D:2004 for Rapid Spanning Tree Protocol (RSTP)
- c. ITU-T
- c. IEEE802.1q for VLAN Tagging
- d. IEEE802.1p for Class of Service
- e. IEEE802.1x for Authentication
- f. IEEE802.3ad for Port Trunk with Link Aggregation Control Protocol (LACP)
- g. IGMP (Internet Group Management Protocol) v1/v2
- h. SNMP (Simple Network Management Protocol) v1/v2/v3
- i. GVRP (GARP VLAN Registration Protocol)
- j. ICMP (Internet Control Message Protocol)
- k. ARP (Address Resolution Protocol)
- l. Telnet
- m. DHCP (Dynamic Host Configuration Protocol) client
- n. TFTP (Trivial File Transfer Protocol)
- o. SNTP (Simple Network Time Protocol)
- p. SMTP (Simple Mail Transfer Protocol)
- q. RMON (Remote Monitoring)
- r. HTTP/HTTPS (Hypertext Transfer Protocol) configuration
- s. Syslog
- t. Profinet CC-B compatible
- u. Modbus/TCP
- v. Ethernet/IP
- w. LLDP (Link Layer Discovery Protocol)
- x. IEEE1588v2 (Precision Time Protocol) hardware assisted transparent clock or IEEE1588v1/v2 sw-assisted boundary clock
- y. IPv4 (selected versions IPv6)
- z. NTP (Network Time Protocol) client
- aa. RADIUS (Remote Authentication Dial-In User Service)
- ab. EAP
- ac. MRP (Client)

Industrial Managed Fast-Ethernet PoE Switches, DIN-Rail mount



SKU	Description	10/100 RJ45 ports	10/100 /1000 RJ45 ports	10/100 /1000 SFP slots	1/10 GbE SFP slots	Max PoE Ports
	EH7506-2SFP	6-Port Managed Fast-Ethernet Switch, 2 SFP	4	-	2	-
	EH7506-4PoE-2SFP	6-Port Managed Fast-Ethernet Switch with 4 PoE and 2 SFP	4	-	2	4
	EH7508-4G-4SFP	8-Port Managed Fast-Ethernet Switch with 4 Gigabit Combo uplink ports	4	(4)	(4)	-
	EH7508-4G-4PoE-4SFP	8-Port Managed Fast-Ethernet Switch with 4 Gigabit Combo uplink ports	4	(4)	(4)	4
	EH7512-4G-4SFP	12-Port Managed Fast-Ethernet Switch with 4 Gigabit Combo uplink ports	8	(4)	(4)	-
	EH7512-4G-4PoE-4SFP	12-Port Managed Fast-Ethernet Switch with 4 Gigabit Combo uplink ports and 4 PoE ports	8	(4)	(4)	4
	EH7512-4G-8PoE-4SFP	12-Port Managed Fast-Ethernet Switch with 4 Gigabit Combo uplink ports and 8 PoE ports	8	(4)	(4)	8
	EH7520-4G-4SFP	20-Port Managed Fast-Ethernet Switch with 4 Gigabit Combo uplink ports	16	(4)	(4)	-
	EH7520-4G-4PoE-4SFP	20-Port Managed Fast-Ethernet Switch with 4 Gigabit Combo uplink ports and 4 PoE ports	16	(4)	(4)	4
	EH7520-4G-8PoE-4SFP	20-Port Managed Fast-Ethernet Switch with 4 Gigabit Combo uplink ports and 8 PoE ports	16	(4)	(4)	8

Industrial Managed Gigabit PoE Switches, DIN-Rail mount



SKU	Description	10/100 RJ45 ports	10/100 /1000 RJ45 ports	1000 SFP slots	1/10 GbE SFP slots	Max PoE Ports
	EHG7504	4-Port Managed Gigabit Switch	-	4	-	-
	EHG7504-4PoE	4-Port Managed Gigabit Switch with 4 PoE ports	-	4	-	4
	EHG7504-2SFP	4-Port Managed Gigabit Switch with 2 SFP slots	-	2	2	-
	EHG7504-2PoE-2SFP	4-Port Managed Gigabit Switch with 2 SFP slots and 2 PoE ports	-	2	2	2
	EHG7504-4SFP	4-Port Managed Gigabit Switch with 4 SFP slots	-	-	4	-
	EHG7508	8-Port Managed Gigabit Switch	-	8	-	-
	EHG7508-4SFP	8-Port Managed Gigabit Switch with 4 SFP slots	-	4	4	-
	EHG7508-4PoE-4SFP	8-Port Managed Gigabit Switch with 4 SFP slots and 4 PoE ports	-	4	4	4
	EHG7508-8PoE	8-Port Managed Gigabit Switch with 8 PoE ports	-	8	-	8

Industrial Managed Gigabit PoE Switches, DIN-Rail mount

NEW
2017 Q3

-40°C 70°C

PROFIBUS
NET

IEEE
1588

Ring

Industrial
EMC


DIN

MILD-STD
810F

Industrial
Switch

Industrial
Switch

IP30
IEC60529

SKU	Description	10/100 RJ45 ports	10/100 /1000 RJ45 ports	100/1000 SFP slots	1/10 GbE SFP slots	Max PoE Ports
	EHG7512-4SFP	-	8	4 *	-	-
	EHG7512-4SFP-4PoE	-	8	4 *	-	4
	EHG7512-4SFP-8PoE	-	8	4 *	-	8
	EHG7512-8SFP	-	4	8 *	-	-
	EHG7512-8SFP-4PoE	-	4	8 *	-	4
	EHG7516-4SFP (**)	-	12	4 (0) *	0 (4)	-
	EHG7516-4SFP-4PoE (**)	-	12	4 (0) *	0 (4)	4
	EHG7516-4SFP-8PoE (**)	-	12	4 (0) *	0 (4)	8
	EHG7516-8SFP (**)	-	8	8 (4) *	0 (4)	-
	EHG7516-8SFP-4PoE (**)	-	8	8 (4) *	0 (4)	4
	EHG7516-8SFP-8PoE (**)	-	8	8 (4) *	0 (4)	4
	EHG7516-12SFP (**)	-	4	12 (8) *	0 (4)	-
	EHG7516-12SFP-4PoE (**)	-	4	12 (8) *	0 (4)	4
	EHG7516-16SFP (**)	-	-	16 (12) *	0 (4)	-
	EHG7520-4SFP (**)	-	16	4 (0) *	0 (4)	-
	EHG7520-4SFP-4PoE (**)	-	16	4 (0) *	0 (4)	4
	EHG7520-4SFP-8PoE (**)	-	16	4 (0) *	0 (4)	8
	EHG7520-8SFP (**)	-	12	8 (4) *	0 (4)	-
	EHG7520-8SFP-4PoE (**)	-	12	8 (4) *	0 (4)	4
	EHG7520-8SFP-8PoE (**)	-	12	8 (4) *	0 (4)	8
EHG7520-12SFP (**)	-	8	12 (8) *	0 (4)	-	
EHG7520-16SFP (**)	-	4	16 (12) *	0 (4)	-	
EHG7520-16SFP-4PoE (**)	-	4	16 (12) *	0 (4)	4	
EHG7520-20SFP (**)	-	-	20 (16) *	0 (4)	-	

* Four out of all SFP ports are working in 1000 Mb/s speed only. Separate version, on 16-20 port only, offer four GbE ports as 10-GbE speed capable.

** Only versions without 10GbE uplink ports are shown above. Rely to the datasheet for more information

Layer-3 Managed Switches

ATOP's advanced Layer-3 (L3) managed Ethernet switches for harsh environments provide a rugged and solid solution for managing advanced networks that require high degree of security and Layer-3 switching capabilities.

Our L3 switches carry out real-time packet routing based on the local network's IP address instead of MAC address of the destination device. This series of switches support:

- a. IPv4 Unicast Static Routing
- b. IPv6 Unicast Static Routing
- c. Dynamic Routing RIP (Routing Information Protocol) V1/V2
- d. OSPFv2 (Open Shortest Path First),
- e. VRRP (Virtual Router Redundancy Protocol),
- f. DVMRP (Distance Vector Multicast Routing Protocol),
- g. PIM-DM (Protocol Independent Multicast – Dense Mode),
- h. PIM-SM (Protocol Independent Multicast – Sparse Mode),
- i. PIM-SSM (Protocol Independent Multicast – Source-Specific Multicast)
- j. IGMP (Internet Group Management Protocol)

All models in this series are designed to withstand strictest EMC requirements of compliant level 3 and level 4. **Our high-performance components guarantee a real-time packet switching even on full load.** They are available in Full-Gigabit versions with 4- to 20-port configurations, RJ45 or SFP connector, and PoE support.

Layer-3 Managed DIN-Rail Switches


Industrial Layer-3 Managed Gigabit PoE Switches, DIN-Rail Mount



SKU	Description	10/100 RJ45 ports	10/100/1000 RJ45 ports	1000 SFP slots	1/10 GbE SFP slots	Max PoE Ports
	EHG7604	4-Port Managed Gigabit Switch	-	4	-	-
	EHG7604-4PoE	4-Port Managed Gigabit Switch with 4 PoE ports	-	4	-	4
	EHG7604-2SFP	4-Port Managed Gigabit Switch with 2 SFP slots	-	2	2	-
	EHG7604-2PoE-2SFP	4-Port Managed Gigabit Switch with 2 SFP slots and 2 PoE ports	-	2	2	-
	EHG7604-4SFP	4-Port Managed Gigabit Switch with 4 SFP slots	-	-	4	-
	EHG7608	8-Port Managed Gigabit Switch	-	8	-	-
	EHG7608-4SFP	8-Port Managed Gigabit Switch with 4 SFP slots	-	4	4	-
	EHG7608-4PoE-4SFP	8-Port Managed Gigabit Switch with 4 SFP slots and 4 PoE ports	-	4	4	4
	EHG7608-8PoE	8-Port Managed Gigabit Switch with 8 PoE ports	-	8	-	-

Industrial Layer-3 Managed Gigabit PoE Switches, DIN-Rail mount



SKU	Description	10/100 RJ45 ports	10/100 /1000 RJ45 ports	100/1000 SFP slots	1/10 GbE SFP slots	Max PoE Ports
	EHG7612-4SFP	-	8	4 *	-	-
	EHG7612-4SFP-4PoE	-	8	4 *	-	4
	EHG7612-4SFP-8PoE	-	8	4 *	-	8
	EHG7612-8SPF	-	4	8 *	-	-
	EHG7612-8SPF-4PoE	-	4	8 *	-	4
	EHG7616-4SFP (**)	-	12	4 (0) *	0 (4)	-
	EHG7616-4SFP-4PoE (**)	-	12	4 (0) *	0 (4)	4
	EHG7616-4SFP-8PoE (**)	-	12	4 (0) *	0 (4)	8
	EHG7616-8SFP (**)	-	8	8 (4) *	0 (4)	-
	EHG7616-8SFP-4PoE (**)	-	8	8 (4) *	0 (4)	4
	EHG7616-8SFP-8PoE (**)	-	8	8 (4) *	0 (4)	4
	EHG7616-12SFP (**)	-	4	12 (8) *	0 (4)	-
	EHG7616-12SFP-4PoE (**)	-	4	12 (8) *	0 (4)	4
	EHG7616-16SFP (**)	-	-	16 (12) *	0 (4)	-
	EHG7620-4SFP (**)	-	16	4 (0) *	0 (4)	-
	EHG7620-4SFP-4PoE (**)	-	16	4 (0) *	0 (4)	4
	EHG7620-4SFP-8PoE (**)	-	16	4 (0) *	0 (4)	8
	EHG7620-8SFP (**)	-	12	8 (4) *	0 (4)	-
	EHG7620-8SFP-4PoE (**)	-	12	8 (4) *	0 (4)	4
	EHG7620-8SFP-8PoE (**)	-	12	8 (4) *	0 (4)	8
EHG7620-12SFP (**)	-	8	12 (8) *	0 (4)	-	
EHG7620-16SFP (**)	-	4	16 (12) *	0 (4)	-	
EHG7620-16SFP-4PoE (**)	-	4	16 (12) *	0 (4)	4	
EHG7620-20SFP (**)	-	-	20 (16) *	0 (4)	-	

* Four out of all SFP ports are working in 1000 Mb/s speed only. Separate version, on 16-20 port only, offer four GbE ports as 10-GbE speed capable.
 ** Only versions without 10GbE uplink ports are shown above. Rely to the datasheet for more information

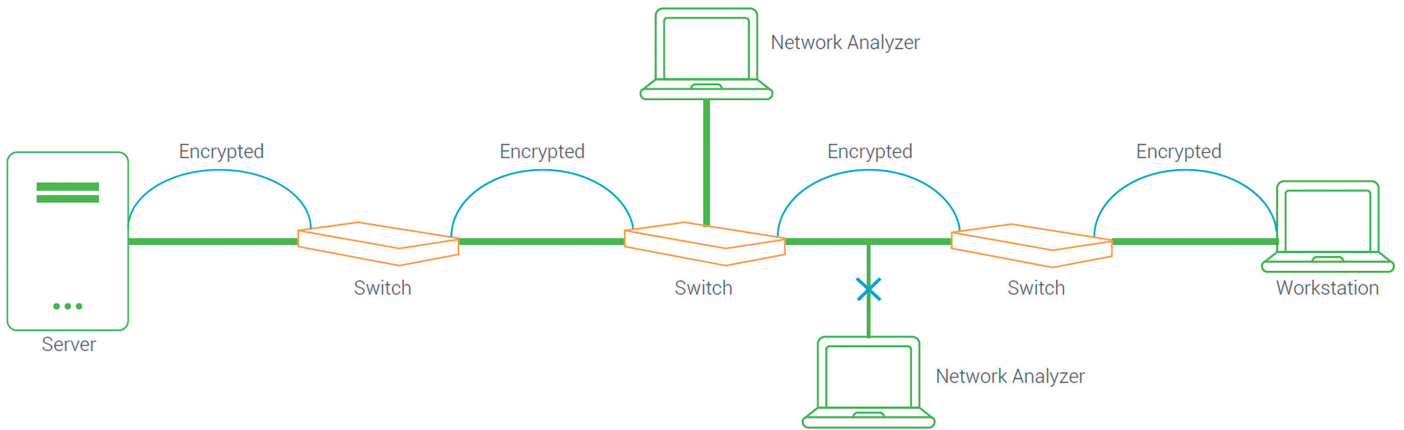
Secure Layer-3 Managed Switches

ATOP's Secured Layer-3 managed switches add security to the industrial network!

The communication between trusted entities in the network is secured through the combination of the following protocols: IEEE 802.1ae protocol (or MACsec), IEEE 802.1x-2010 protocol for network access control, and strong cryptography of 128-,192-,or 256-bit of GCM-AES.

These products support all authentication, integrity, and confidentiality requirements. Hop-by-Hop encrypted communication with IEEE 802.1x-2010 authentication protocol (i.e., decrypted upon receipt and then encrypted again with a different key before forwarding) protects the network not only from wiretapping, masquerading, man-in-the-middle attacks, and denial-of-service attacks, but also from impersonation and replay attacks.

Security in Short Hops



802. 1AE encrypts frames between network devices, not end to end.

The frames are decrypted in the switches, processed, then re-encrypted and sent to the next device. Network traffic can't be monitored from the wire although a network Analyzer attached to a switch Mirroring port or to a Hub can do this.

Industrial Secure Layer-3 Managed Gigabit PoE Switches, DIN-Rail Mount

NEW
2017 Q2
-40°C
70°C
PROFIBUS
NET
IEEE 1588
Ring
Lock
L3
Industrial EMC
DIN
MILD-STD 810F
IP30 IEC60529

SKU	Description	10/100 RJ45 ports	10/100 / 1000 RJ45 ports*	1000 SFP slots*	1/10 Gigabit Uplink	Max PoE Ports	
	EHG7704	4-Port Managed Din-Rail Secure Gigabit Layer-3 Switch	4	-	-	-	
	EHG7704-2SFP	4-Port Managed Din-Rail Secure Gigabit Layer-3 Switch with 2 SFP slots	2	2	-	-	
	EHG7704-2PoE-2SFP	4-Port Managed Din-Rail Secure Gigabit Layer-3 Switch with 2 SFP slots and 2 PoE ports	2	2	-	2	
	EHG7708	8-Port Managed Din-Rail Secure Gigabit Layer-3 Switch	8	-	-	-	
	EHG7708-4PoE	8-Port Managed Din-Rail Secure Gigabit Layer-3 Switch with 4 PoE ports	4	-	-	4	
	EHG7708-8PoE	8-Port Managed Din-Rail Secure Gigabit Layer-3 Switch with 8 PoE ports	0	8	-	8	
	EHG7708-8SFP	8-Port Managed Din-Rail Secure Gigabit Layer-3 Switch with 8 SFP slots	-	-	8	-	-
	EHG7708-4SFP	8-Port Managed Din-Rail Secure Gigabit Layer-3 Switch with 4 SFP slots	4	4	-	-	
	EHG7708-4PoE-4SFP	8-Port Managed Din-Rail Secure Gigabit Layer-3 Switch with 4 SFP slots and 4 PoE ports	4	4	4	-	4

* all ports are MACsec capable

Rack-mount Managed Switches

ATOP's Rack-mount Switches provide affordable, rugged, reliable, and secure solutions for the network!

ATOP's Rack-mount Switching products are equipped with **high port density, PoE, Layer-3 routing, secure communication using MACsec encryption, and rugged to withstand harsh environments.**

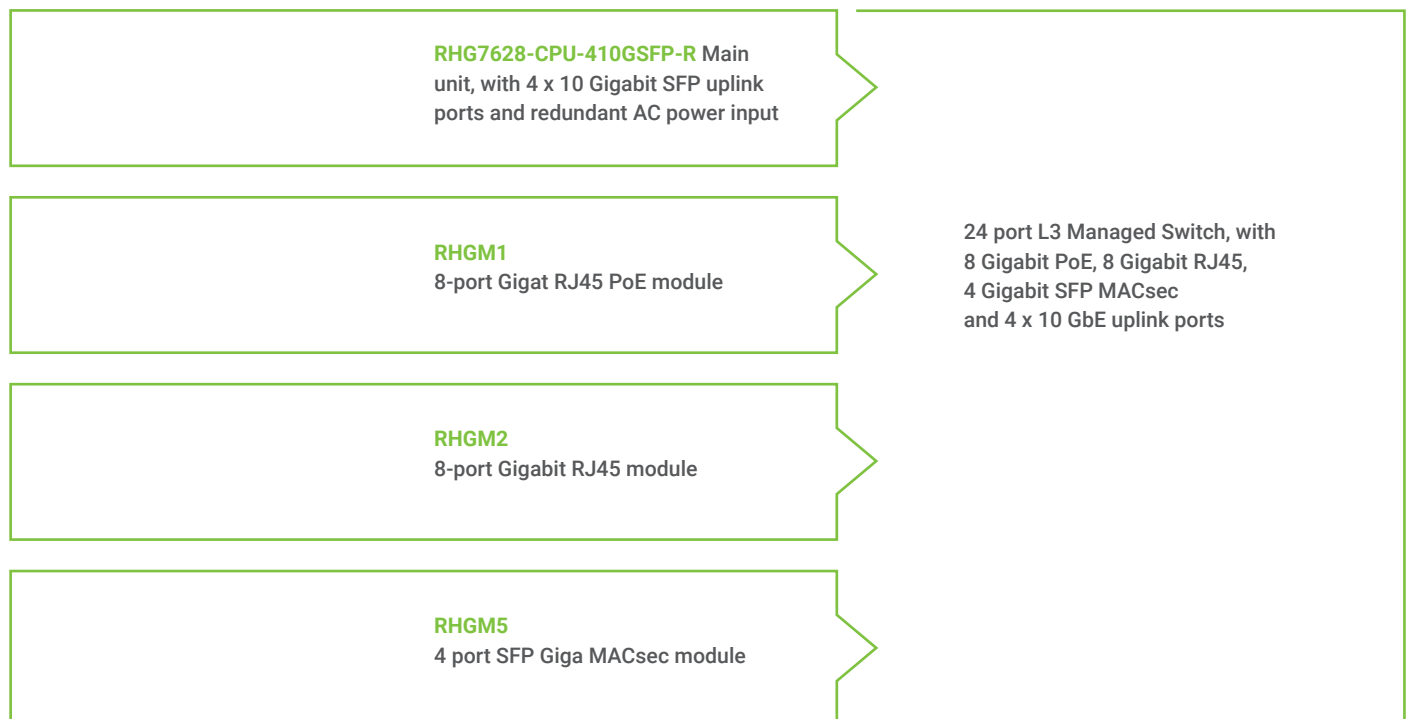
Equipped with redundant Power Input for both Switching Core and PoE, all ATOP's Rack-mount Switching solutions have the flexibility of more than 500 different combinations, with swappable modules.

And if your needs change in time, you can easily convert ATOP's Rack-mount switch to a completely unit just in minutes!

Modular Concept

ATOP's Managed Rack-mount switches provide the flexibility that the application needs in a modular concept. A custom device can be built in a very simple way. You could choose from among five different hardware versions and five different 8-port hot-swappable modules.

The software automatically detects the connected module and enables the related set-up panels.



Switch Core Platforms

ATOP's rack-mount switches provide 4 different hardware versions, whether you need Layer-2 or Layer-3 Switching and 4 powerful 10 Gigabit uplink ports rather than 4 Gigabit uplinks.

All of switches are available with or without redundant AC power supply for the CPU board and with 110 VAC or 220 VAC power input. The main board has 3 separate module slots. The customer may choose the combinations that better suit their application with easy installation. After putting the desired modules together, our smart software will do the rest.

For specific Layer-2 and Layer-3 features, please refer to the datasheet.

Cases requiring PoE, the input power has to be supplied from additional, external 48~56 VDC power supply. With a 24 port-PoE configuration, ATOP's hardware can supply up to 720 Watts of power.

Industrial Rack-Mount Gigabit Managed Switch



Layer	Uplink ports	Redundant power supply for CPU board (100~240 VAC)	Redundant power supply for CPU board (100~240 VAC)	Redundant DC 48~56V power supply
Layer 2*	4 x 1 GbE	RHG7528-CPU-4SFP-R	RHG7528-CPU-4SFP	RHG7528-CPU-4SFP-DC
	4 x 10 GbE	RHG7528-CPU-410GSFP-R	RHG7528-CPU-410GSFP	RHG7528-CPU-410GSFP-DC
Layer 3	4 x 1 GbE	RHG7628-CPU-4SFP-R	RHG7628-CPU-4SFP	RHG7628-CPU-4SFP-DC
	4 x 10 GbE	RHG7628-CPU-410GSFP-R	RHG7628-CPU-410GSFP	RHG7628-CPU-410GSFP-DC

* Layer 2 models do not support MACsec M4-M5 modules

Modules

Five different hot-swappable modules are available for RHG7X28 Series. You may choose the one you'd like in order to obtain up to 74 different combinations.

a. RHG7X28-M1- 8-Port RJ45 Power over Ethernet module:

- i. 8 RJ45 10/100/1000 BaseT(X) ports
- ii. 30 W PoE Power per port (802.3af, 802.3at)
- iii. 240 W Maximum PoE power per module

b. RHG7X28-M2- 8-Port RJ45 module:

- i. 8 RJ45 10/100/1000 BaseT(X) ports

c. RHG7X28-M3- 8-Port SFP module:

- i. 8 SFP 100/1000 BaseF(X) slots
- ii. Speed software-selectable

d. RHG7X28-M4- 4-Port RJ45 module with MACsec (*):

- i. 4 RJ45 10/100/1000 BaseT(X) ports
- ii. MACsec Hardware encryption supported on all ports

e. RHG7X28-M5- 4-Port SFP module with MACsec (*):

- i. 4 SFP 100/1000 BaseF(X) slots
- ii. MACsec Hardware encryption supported on all ports

* Layer 2 models do not support MACsec M4-M5 modules.

Up to 74 combinations, in 3 different power supply options

Layer	Uplink	SKU	M1	M2	M3	M4	M5	PoE	non-PoE	SFP	Sec RJ45	Sec SFP
L2	4 x 1Gb SFP	RHG7528-8PoE-12SFP	1	1	1	0	0	8 x 1 Gb	8 x 1 Gb	8 x 1 Gb	no	no
	4 x 1Gb SFP	RHG7528-16PoE-4SFP	2	1	0	0	0	16 x 1 Gb	8 x 1 Gb	no	no	no
	4 x 1Gb SFP	RHG7528-28SFP	0	0	3	0	0	no	no	24 x 1 Gb	no	no
	4 x 1Gb SFP	RHG7528-8PoE-20SFP	1	0	2	0	0	8 x 1 Gb	no	16 x 1 Gb	no	no
	4 x 1Gb SFP	RHG7528-8PoE-4SFP	1	2	0	0	0	8 x 1 Gb	16 x 1 Gb	no	no	no
	4 x 1Gb SFP	RHG7528-16PoE-12SFP	2	0	1	0	0	16 x 1 Gb	no	8 x 1 Gb	no	no
	4 x 1Gb SFP	RHG7528-24PoE-4SFP	3	0	0	0	0	24 x 1 Gb	no	no	no	no
	4 x 1Gb SFP	RHG7528-20SFP	0	1	2	0	0	no	8 x 1 Gb	16 x 1 Gb	no	no
	4 x 1Gb SFP	RHG7528-12SFP	0	2	1	0	0	no	16 x 1 Gb	8 x 1 Gb	no	no
	4 x 1Gb SFP	RHG7528-4SFP	0	3	0	0	0	no	24 x 1 Gb	no	no	no
	4 x 10Gb SFP	RHG7528-8PoE-8SFP-410GSFP	1	1	1	0	0	8 x 1 Gb	8 x 1 Gb	8 x 1 Gb	no	no
	4 x 10Gb SFP	RHG7528-16PoE-410GSFP	2	1	0	0	0	16 x 1 Gb	8 x 1 Gb	no	no	no
	4 x 10Gb SFP	RHG7528-24SFP-410GSFP	0	0	3	0	0	no	no	24 x 1 Gb	no	no
	4 x 10Gb SFP	RHG7528-8PoE-16SFP-410GSFP	1	0	2	0	0	8 x 1 Gb	no	16 x 1 Gb	no	no
	4 x 10Gb SFP	RHG7528-8PoE-410GSFP	1	2	0	0	0	8 x 1 Gb	16 x 1 Gb	no	no	no
	4 x 10Gb SFP	RHG7528-16PoE-8SFP-410GSFP	2	0	1	0	0	16 x 1 Gb	no	8 x 1 Gb	no	no
	4 x 10Gb SFP	RHG7528-24PoE-410GSFP	3	0	0	0	0	24 x 1 Gb	no	no	no	no
	4 x 10Gb SFP	RHG7528-16SFP-410GSFP	0	1	2	0	0	no	8 x 1 Gb	16 x 1 Gb	no	no
	4 x 10Gb SFP	RHG7528-8SFP-410GSFP	0	2	1	0	0	no	16 x 1 Gb	8 x 1 Gb	no	no
	4 x 10Gb SFP	RHG7528-410GSFP	0	3	0	0	0	no	24 x 1 Gb	no	no	no
L3	4 x 1Gb SFP	RHG7628-8PoE-12SFP	1	1	1	0	0	8 x 1 Gb	8 x 1 Gb	8 x 1 Gb	no	no
	4 x 1Gb SFP	RHG7628-16PoE-4SFP	2	1	0	0	0	16 x 1 Gb	8 x 1 Gb	no	no	no
	4 x 1Gb SFP	RHG7628-28SFP	0	0	3	0	0	no	no	24 x 1 Gb	no	no
	4 x 1Gb SFP	RHG7628-8PoE-20SFP	1	0	2	0	0	8 x 1 Gb	no	16 x 1 Gb	no	no
	4 x 1Gb SFP	RHG7628-8PoE-4SFP	1	2	0	0	0	8 x 1 Gb	16 x 1 Gb	no	no	no
	4 x 1Gb SFP	RHG7628-16PoE-12SFP	2	0	1	0	0	16 x 1 Gb	no	8 x 1 Gb	no	no
	4 x 1Gb SFP	RHG7628-24PoE-4SFP	3	0	0	0	0	24 x 1 Gb	no	no	no	no
	4 x 1Gb SFP	RHG7628-20SFP	0	1	2	0	0	no	8 x 1 Gb	16 x 1 Gb	no	no
	4 x 1Gb SFP	RHG7628-12SFP	0	2	1	0	0	no	16 x 1 Gb	8 x 1 Gb	no	no
	4 x 1Gb SFP	RHG7628-4SFP	0	3	0	0	0	no	24 x 1 Gb	no	no	no
	4 x 1Gb SFP	RHG7628-12S	0	0	0	3	0	no	no	no	12 x 1 Gb	no
	4 x 1Gb SFP	RHG7628-4SFP-12SSFP	0	0	0	0	3	no	no	no	no	12 x 1 Gb
	4 x 1Gb SFP	RHG7628-4S-4SFP-8SSFP	0	0	0	1	2	no	no	no	4 x 1 Gb	8 x 1 Gb
	4 x 1Gb SFP	RHG7628-8S-4SFP-4SSFP	0	0	0	2	1	no	no	no	8 x 1 Gb	4 x 1 Gb
	4 x 1Gb SFP	RHG7628-4S-12SFP-4SSFP	0	0	1	1	1	no	no	8 x 1 Gb	4 x 1 Gb	4 x 1 Gb
	4 x 1Gb SFP	RHG7628-4S-4SFP-4SSFP	0	1	0	1	1	no	8 x 1 Gb	no	4 x 1 Gb	4 x 1 Gb
	4 x 1Gb SFP	RHG7628-8PoE-4S-4SFP-4SSFP	1	0	0	1	1	8 x 1 Gb	no	no	4 x 1 Gb	4 x 1 Gb
	4 x 1Gb SFP	RHG7628-8PoE-4S-4SFP	1	1	0	1	0	8 x 1 Gb	8 x 1 Gb	no	4 x 1 Gb	no
	4 x 1Gb SFP	RHG7628-8PoE-4SFP-4SSFP	1	1	0	0	1	8 x 1 Gb	8 x 1 Gb	no	no	4 x 1 Gb

Layer	Uplink	SKU	M1	M2	M3	M4	M5	PoE	non-PoE	SFP	Sec RJ45	Sec SFP
L3	4 x 1Gb SFP	RHG7628-4S-12SFP	0	1	1	1	0	no	8 x 1 Gb	8 x 1 Gb	4 x 1 Gb	no
	4 x 1Gb SFP	RHG7628-12SFP-4SSFP	0	1	1	0	1	no	8 x 1 Gb	8 x 1 Gb	no	4 x 1 Gb
	4 x 1Gb SFP	RHG7628-16PoE-4S-4SFP	2	0	0	1	0	16 x 1 Gb	no	no	4 x 1 Gb	no
	4 x 1Gb SFP	RHG7628-16PoE-4SFP-4SSPF	2	0	0	0	1	16 x 1 Gb	no	no	no	4 x 1 Gb
	4 x 1Gb SFP	RHG7628-4S-4SFP	0	2	0	1	0	no	16 x 1 Gb	no	4 x 1 Gb	no
	4 x 1Gb SFP	RHG7628-4SFP-4SSFP	0	2	0	0	1	no	16 x 1 Gb	no	no	4 x 1 Gb
	4 x 1Gb SFP	RHG7628-4S-20SFP	0	0	2	1	0	no	no	16 x 1 Gb	4 x 1 Gb	no
	4 x 1Gb SFP	RHG7628-20SFP-4SSFP	0	0	2	0	1	no	no	16 x 1 Gb	no	4 x 1 Gb
	4 x 10Gb SFP	RHG7628-8PoE-8SFP-410GSFP	1	1	1	0	0	8 x 1 Gb	8 x 1 Gb	8 x 1 Gb	no	no
	4 x 10Gb SFP	RHG7628-16PoE-410GSFP	2	1	0	0	0	16 x 1 Gb	8 x 1 Gb	no	no	no
	4 x 10Gb SFP	RHG7628-24SFP-410GSFP	0	0	3	0	0	no	no	24 x 1 Gb	no	no
	4 x 10Gb SFP	RHG7628-8PoE-16SFP-410GSFP	1	0	2	0	0	8 x 1 Gb	no	16 x 1 Gb	no	no
	4 x 10Gb SFP	RHG7628-8PoE-410GSFP	1	2	0	0	0	8 x 1 Gb	16 x 1 Gb	no	no	no
	4 x 10Gb SFP	RHG7628-16PoE-8SFP-410GSFP	2	0	1	0	0	16 x 1 Gb	no	8 x 1 Gb	no	no
	4 x 10Gb SFP	RHG7628-24PoE-410GSFP	3	0	0	0	0	24 x 1 Gb	no	no	no	no
	4 x 10Gb SFP	RHG7628-16SFP-410GSFP	0	1	2	0	0	no	8 x 1 Gb	16 x 1 Gb	no	no
	4 x 10Gb SFP	RHG7628-8SFP-410GSFP	0	2	1	0	0	no	16 x 1 Gb	8 x 1 Gb	no	no
	4 x 10Gb SFP	RHG7628-410GSFP	0	3	0	0	0	no	24 x 1 Gb	no	no	no
	4 x 10Gb SFP	RHG7628-12S-410GSFP	0	0	0	3	0	no	no	no	no	12 x 1 Gb
	4 x 10Gb SFP	RHG7628-12SSFP-410GSFP	0	0	0	0	3	no	no	no	12 x 1 Gb	no
	4 x 10Gb SFP	RHG7628-4S-8SSFP-410GSFP	0	0	0	1	2	no	no	no	4 x 1 Gb	8 x 1 Gb
	4 x 10Gb SFP	RHG7628-8S-4SSFP-410GSFP	0	0	0	2	1	no	no	no	8 x 1 Gb	4 x 1 Gb
	4 x 10Gb SFP	RHG7628-4S-8SFP-4SSFP-410GSFP	0	0	1	1	1	no	no	8 x 1 Gb	4 x 1 Gb	4 x 1 Gb
	4 x 10Gb SFP	RHG7628-4S-4SSFP-410GSFP	0	1	0	1	1	no	8 x 1 Gb	no	4 x 1 Gb	4 x 1 Gb
	4 x 10Gb SFP	RHG7628-8PoE-4S-4SSFP-410GSFP	1	0	0	1	1	8 x 1 Gb	no	no	4 x 1 Gb	4 x 1 Gb
	4 x 10Gb SFP	RHG7628-8PoE-4S-410GSFP	1	1	0	1	0	8 x 1 Gb	8 x 1 Gb	no	4 x 1 Gb	no
	4 x 10Gb SFP	RHG7628-8PoE-4SSFP-410GSFP	1	1	0	0	1	8 x 1 Gb	8 x 1 Gb	no	no	4 x 1 Gb
	4 x 10Gb SFP	RHG7628-4S-8SFP-410GSFP	0	1	1	1	0	no	8 x 1 Gb	8 x 1 Gb	4 x 1 Gb	no
	4 x 10Gb SFP	RHG7628-4SFP-8SSFP-410GSFP	0	1	1	0	1	no	8 x 1 Gb	8 x 1 Gb	no	4 x 1 Gb
	4 x 10Gb SFP	RHG7628-16PoE-4S-410GSFP	2	0	0	1	0	16 x 1 Gb	no	no	4 x 1 Gb	no
	4 x 10Gb SFP	RHG7628-16PoE-4SSPF-410GSFP	2	0	0	0	1	16 x 1 Gb	no	no	no	4 x 1 Gb
	4 x 10Gb SFP	RHG7628-4S-410GSFP	0	2	0	1	0	no	16 x 1 Gb	no	4 x 1 Gb	no
4 x 10Gb SFP	RHG7628-4SSFP-410GSFP	0	2	0	0	1	no	16 x 1 Gb	no	no	4 x 1 Gb	
4 x 10Gb SFP	RHG7628-4S-16SFP-410GSFP	0	0	2	1	0	no	no	16 x 1 Gb	4 x 1 Gb	no	
4 x 10Gb SFP	RHG7628-16SFP-4SSFP-410GSFP	0	0	2	0	1	no	no	16 x 1 Gb	no	4 x 1 Gb	

Industry-specific Ethernet Switches

Power Networking: IEC 61850-3 made easy

Over the last few decades, various countries around have developed, promoted, and adopted different communication protocols for use between components (such as Control Centers, Remote Terminal Units, Intelligent Electronics Devices) and for network management in electrical power grid. In the North American countries, Distributed Network Protocol (DNP) 3.0 became the standard which was also adopted by IEEE as IEEE Std. 1815-2012, while the European countries relied mainly on IEC 60870-5-101/103/104. The rest of the world adopted MODBUS protocol due to its openness and ease.

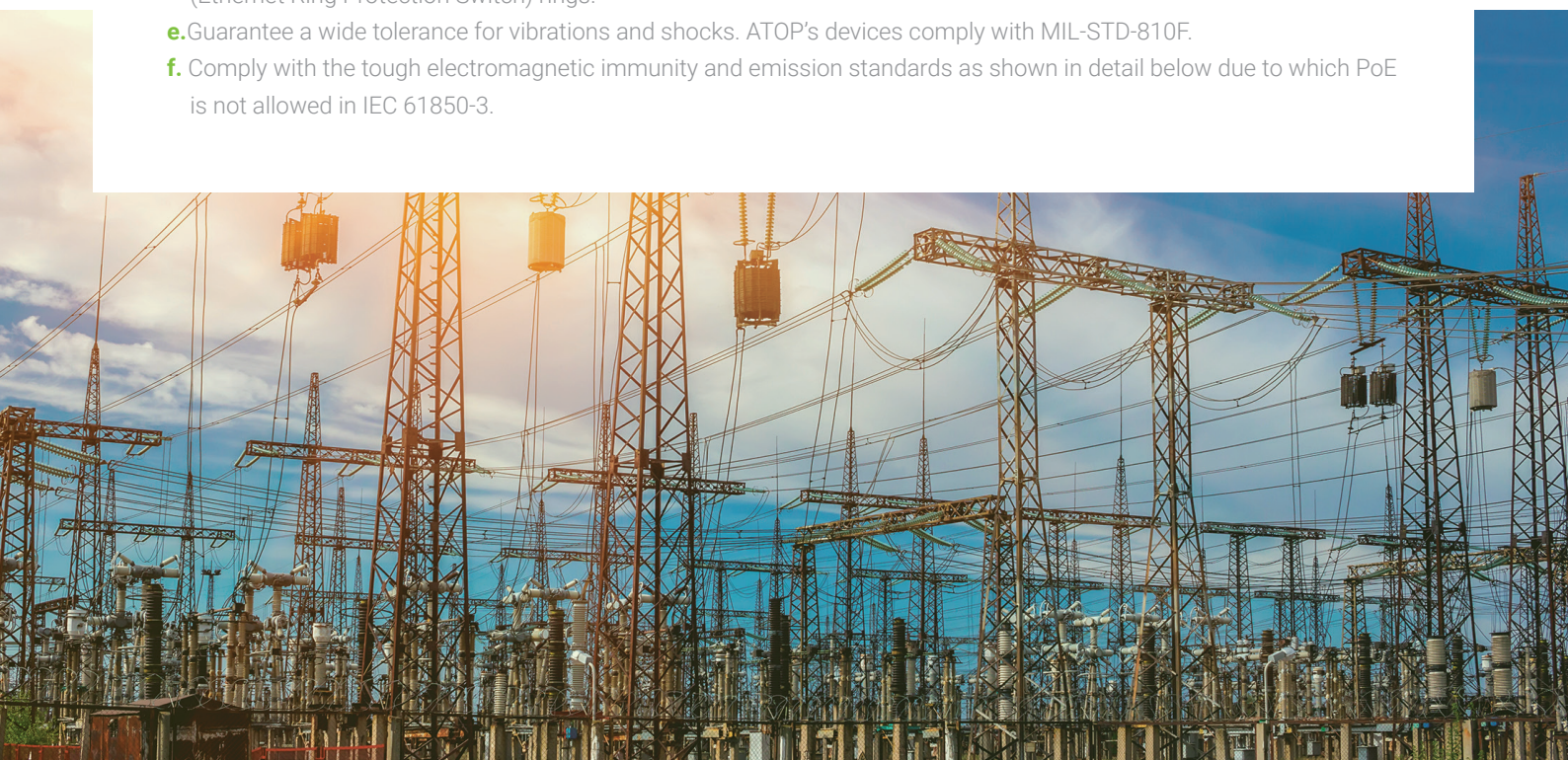


Recently, there have been attempts to develop a unified and standardized communication protocol for electrical substation and power grid automation which is called **IEC 61850**. The new IEC 61850 standard focuses its domain knowledge on the electrical power grid system. It is an object-oriented protocol which utilizes a data modeling scheme that clearly describes each component (such as process objects, protection, and control functionality) of the grid or the substation as standard logical nodes.

This enables data access to the power grid system to yield more details. **IEC 61850 Part 3 also defines requirements for network and hardware that are suitable for substation automation.** These requirements include electromagnetic immunity (EMI), surge protection, vibration, shock resistance, and temperature ranges that the devices in smart grid system should comply to.

Specifically, an IEC 61850-3 compliant device should:

- a. Have a wide temperature range from -40 to 85 °C;
- b. Be capable to handle reliable, long distance transmissions through Fiber Optics connectivity.
- c. Guarantee QoS (Quality of Service) management and real-time packet switching for GOOSE (Generic-Object-Oriented-Substation-Event).
- d. Guarantee a certain level of redundancy in order to minimize packet loss (ring topologies should be supported, and zero-packet-loss technologies such as HSR (High availability Seamlessly Redundancy) or PRP (Parallel Redundancy Protocol) are warmly recommended. ATOP's devices support RSTP (Rapid Spanning-Tree Protocol) and ERPS (Ethernet Ring Protection Switch) rings.
- e. Guarantee a wide tolerance for vibrations and shocks. ATOP's devices comply with MIL-STD-810F.
- f. Comply with the tough electromagnetic immunity and emission standards as shown in detail below due to which PoE is not allowed in IEC 61850-3.



ATOP provides, aside the certified networking equipment listed in this brochure, additional IEC 61850-3 compliant products. For more information, please check out our **Smart Grid Whitepaper** or our **Protocol Gateway and Real-Time Communication Solutions Brochure**.

Test	Version	Item	Value	Level	Criterion
IEC 61000-4-2	2008	ESD	Contact Discharge AirDischarge	±8KV ±15KV	4 4 B B
IEC 61000-4-3	2010	RS	Enclosure Port	10(V/m), 80-1000MHz, 80% AM, 1G~3GHz	3 A
IEC 61000-4-4	2012	EFT	AC Power Port DC Power Port Signal Port	±4.0KV@ 2.5KHz ±4.0KV@ 2.5KHz ±2.0KV@ 5.0KHz	4 4 4 B B B
IEC 61000-4-5	2014	Surge	AC Power Port AC Power Port DC Power Port DC Power Port Signal Port	Line-to Line±2.0KV Line-to Earth±4.0KV Line-to Line±1.0KV Line-to Earth±2.0KV Line-to Earth±4.0KV	4 4 3 3 4 B B B B B
IEC 61000-4-6	2013	CS	AC Power Port DC Power Port Signal Port	10V, 150KHz~80MHz, 80%AM 10V, 150KHz~80MHz, 80%AM 10V, 150KHz~80MHz,80%AM	3 3 3 A A A
IEC 61000-4-8	2009	PFMF	(Enclosure)	100A/m continuous,1000A/m for 3S	5 A
IEC61000-4-10	2000	Damped Oscillatory magnetic Field	(Enclosure)	100A/m,100KHz,1MHz	5 A
IEC 61000-4-11	2004	DIP	AC Power Port	Drop 70% for 3 times/S (1 Period) Drop 40% for 3 times/1mS (50 Period) Drop 100% for 3 times/50mS (5 & 50 Period)	N/A N/A N/A A A A
IEC 61000-4-12	2006	Damped Oscillatory	AC Power Port Signal Port	2.5KV common,1KV differential mode @ 1MHz 2.5KV common,1KV differential mode @ 1MHz	3 3 B B

IEC 61850-3 DIN-Rail Managed Gigabit Switches

IEC 61850-3 Certified Managed Gigabit Switches, DIN-Rail mount



SKU	Description	10/100 / 1000 RJ45 ports	1000 SFP slots	Total Ports	Power Input	
	EHG9508-2SFP	8-Port IEC 61850-3 certified Managed Gigabit Switch, with 2 Gigabit SFP slots,	6	2	8	Dual 24~57 VDC input
	EHG9508-2SFP-HV	8-Port IEC 61850-3 certified Managed Gigabit Switch, with 2 Gigabit SFP slots, High Voltage	6	2	8	Dual 100~370 VDC input
	EHG9508-2SFP-AC	8-Port IEC 61850-3 certified Managed Gigabit Switch, with 2 Gigabit SFP slots, AC input	6	2	8	Dual 88~264 VAC input
	EHG9512-4SFP	12-Port IEC 61850-3 certified Managed Gigabit Switch, with 8 Gigabit SFP slots	8	4	12	Dual 24~57 VDC input
	EHG9512-4SFP- HV	12-Port IEC 61850-3 certified Managed Gigabit Switch, with 8 Gigabit SFP slots, High Voltage	8	4	12	Dual 100~370 VDC input
	EHG9512-4SFP- AC	12-Port IEC 61850-3 certified Managed Gigabit Switch, with 8 Gigabit SFP slots, AC input	8	4	12	Dual 88~264 VAC input

IEC 61850-3 Rack-Mount Managed Gigabit Switch

IEC 61850-3 Certified Managed Gigabit Switches, Rack-mount



These models are available with 4x10GbE uplink ports or 4x1GbE uplink ports, either with RJ45 or SFP connector. Product versions because of different power supply rating, different location of the power input or location of LED on the case are not shown here. To identify a version of the switch in the table below, please add the following suffixes to the models:

- no suffix: 24~48 VDC power input
- HV version: 100-240 VAC/100-370 VDC power input
- LB version: LED board on the back side; power input on the front side
- HV-LB version: 100-240 VAC/100-370 VDC power input; LED board on the back side; power input on the front side

SKU	Description	10/100 / 1000 RJ45 ports	100/1000 SFP slots	Uplink SFP slots	4 SFP uplink port speed
EHG9528-410GSFP	28-Port IEC 61850-3 Managed Rack-mount switch with 4 x 10 Gigabit uplink SFP slots	24	-	4	4 x 10 GbE
EHG9528-8SFP-410GSFP	28-Port IEC 61850-3 Managed Rack-mount switch with 8 SFP and 4 x 10 Gigabit uplink SFP slots	16	8	4	4 x 10 GbE
EHG9528-16SFP-410GSFP	28-Port IEC 61850-3 Managed Rack-mount switch with 16 SFP and 4 x 10 Gigabit uplink SFP slots	8	16	4	4 x 10 GbE
EHG9528-24SFP-410GSFP	28-Port IEC 61850-3 Managed Rack-mount switch with 24 SFP and 4 x 10 Gigabit uplink SFP slots	-	24	4	4 x 10 GbE
EHG9528-4GSFP	28-Port IEC 61850-3 Managed Rack-mount switch with 4 Gigabit uplink SFP slots	24	-	4	4 x 1 GbE
EHG9528-8SFP-4GSFP	28-Port IEC 61850-3 Managed Rack-mount switch with 8 SFP and 4 Gigabit uplink SFP slots	16	8	4	4 x 1 GbE
EHG9528-16SFP-4GSFP	28-Port IEC 61850-3 Managed Rack-mount switch with 16 SFP and 4 Gigabit uplink SFP slots	8	16	4	4 x 1 GbE
EHG9528-24SFP-4GSFP	28-Port IEC 61850-3 Managed Rack-mount switch with 24 SFP and 4 Gigabit uplink SFP slots	-	24	4	4 x 1 GbE

Railway Networking: EN50155 Made Easy

EN 50155 is a European norm, but is widely recognized for electronic equipment that is used in any railway application.

This standards cover several criteria that networking devices installed on trains must comply with.

EN 50155 defines product features that include temperature ranges, humidity, shock resistance, vibration resistance, power supply, electromagnetic interference/susceptibility, power surge, electrostatic discharge (ESD) and transient factors.

ATOP's railway-certified switches combine the powerful platforms of industrial Ethernet switches and all of their advanced features in a robust and reliable unit.



Mechanical requirements

• Rolling equipment:

- Vibration: Category < 0.3 Kg
- Frequency range : 5 – 150 Hz
- Acceleration: 5G
- Shock (half sinus): Long/ Trans. /Vert Axis
- Peak acceleration: 5g/2g/1g
- Duration: 50 ms / 20 ms / 20 ms

• Ground equipment: N/A

Temperature Requirements

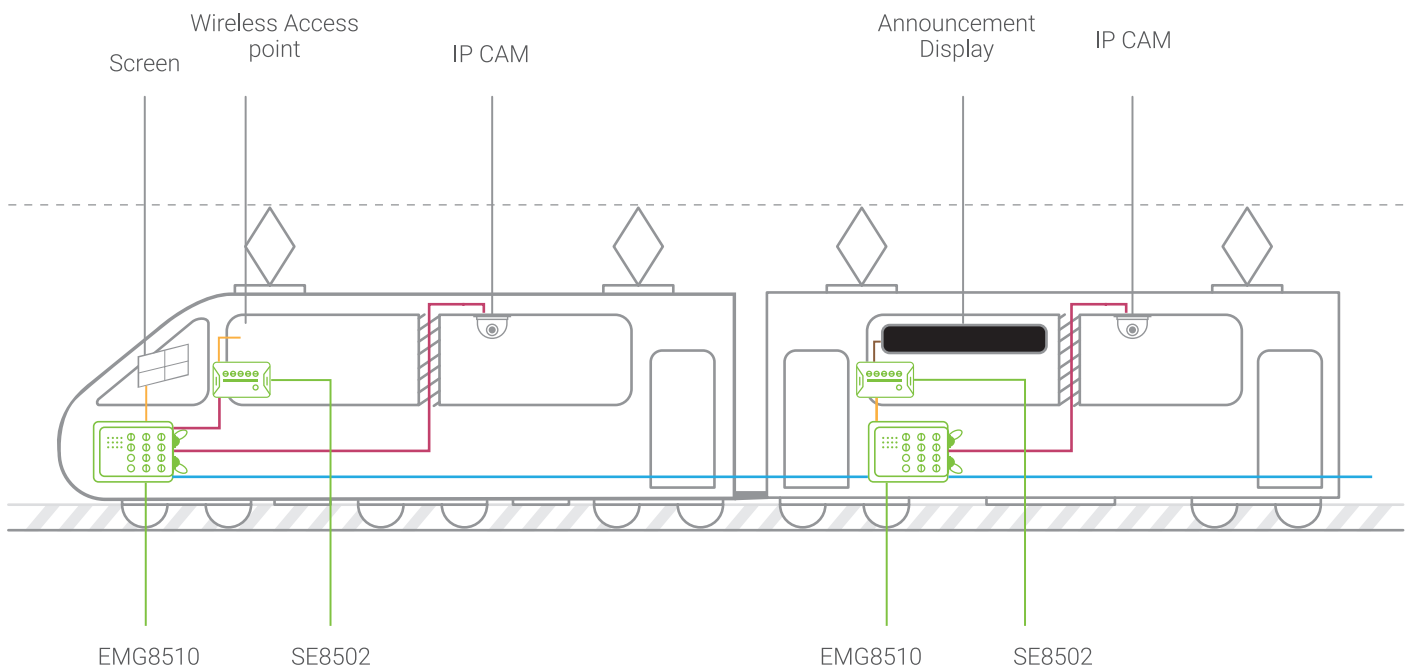
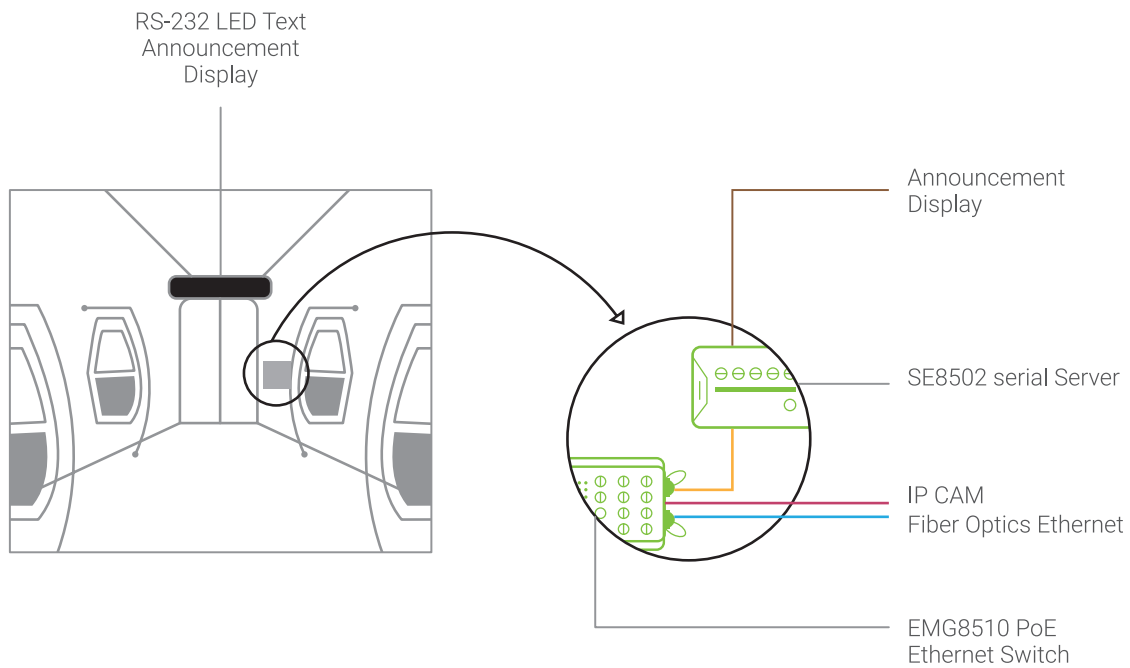
Category	Internal cabinet temperature range	Ambient board temperature range	GAIA converter modules temperature range
T1	-25/55 °C	-25/70 °C	Industrial line: -40/71 °C ambient
T2	-40/55 °C	-40/70 °C	Industrial line: -40/71 °C ambient
T3	-25/70 °C	-25/85 °C	Hi-rel line: -40/85 °C ambient
T4	-40/70 °C	-40/85 °C	Hi-rel line: -40/85 °C ambient

Humidity: EN50155 2 x 25H 40

Electromagnetic compatibility:

- CE/FCC
- 24 VDC: 500 Veff/ 50 Hz/ 1 min
- 48 VDC: 500 Veff/ 50 Hz/ 1 min
- 72~125 VDC : 1,000 Veff/ 50 Hz/ 1 min
- 125~315 V: 1,500 Veff/ 50 Hz/ 1 min
- For other details rely to EN50155

...our Application Example



PROTOCOLS

- Fiber Optics Ethernet
- Twist Pair Ethernet
- PoE
- RS-232 Serial

...more information on our Application Example

EMG8305 - EN50155 Railway-certified IP67 Gigabit Unmanaged switch



- 5 x 10/100/1000 ports with M12 connectors
- EN50155, EN50121-4, UL/IEC(CB) 61010-2-201 certified
- Redundant Power Input; M12 A-coding or X-coding available
- -40~75 °C operational temperature, IP67 Aluminum Housing, MIL-STD ready
- Profinet Packet Prioritization

EMG8510 - EN50155 Railway-certified IP67 Gigabit Managed PoE Switch with SFP backbone



- 8 x 10/100/1000 ports with M12 connectors and 2 Gigabit SFP slots
- Max 8 x 30 W 802.3af- 802.3at Power over Ethernet ports (240W power budget)
- EN50155, EN50121-4, UL/IEC(CB) 61010-2-201 certified
- Redundancy through ERPS/RSTP/MRP (client)
- Hw-assisted IEEE 1588v2 Precision timing Transparent
- -40~75 °C operational temperature, IP67 Aluminum Housing, MIL-STD ready
- Profinet CC-B compatible

SE8502 - EN50155 Railway-certified IP68 Serial Device Server




- 1 Fast Ethernet port with M12 connectors
- 2 isolated RS-232 RS-485 RS-422 serial ports with M12 connector
- EN50155, EN50121-4 certified
- 15 kV serial port isolation, VirtualCOM.
- -40~75 °C operational temperature, IP68 Housing



EN50155 Railway Unmanaged Switches

Unmanaged Fast-Ethernet Switches, Gigabit Uplink, DIN-Rail Mount




SKU	Description	10/100 RJ45 ports	10/100 / 1000 RJ45	1000 SFP slots	100 Fiber Ports	1000 Fiber Ports
	EH7310-G	10-Port Unmanaged Ethernet Switch with 2 Gigabit RJ45 uplink ports	8	2	-	-
	EH7310-G-2Fm	10-Port Unmanaged Ethernet Switch with 2 Gigabit Multi-mode Fiber Optic Uplinks	8	-	-	2 (m)
	EH7310-G-2Fs	10-Port Unmanaged Ethernet Switch with 2 Gigabit Single-mode Fiber Optic Uplinks	8	-	-	2 (s)
	EH7310-2Fm	10-Port Unmanaged Ethernet Switch with 2 Multi-mode Fiber Optic Uplinks	8	-	-	2 (m)
	EH7310-2Fs	10-Port Unmanaged Ethernet Switch with 2 Single-mode Fiber Optic Uplinks	8	-	-	2 (s)

Unmanaged Waterproof Gigabit Switches, Field Mount, Aluminum Housing

NEW



SKU	Description	10/100 M12 ports	10/100 / 1000 M12 ports	M12 Type	Additional features	
	EMG8305-M12-A	5-Port IP67 Unmanaged Gigabit Switch with M12 connectors, A-coding	-	5	A coding	Profinet packet prioritization
	EMG8305-M12-X	5-Port IP67 Unmanaged Gigabit Switch with M12 connectors, X-coding	-	5	X coding	Profinet packet prioritization

EN50155 Managed Switches

Managed Waterproof Gigabit Switches, Field-Mount, Aluminum Housing

NEW
2017 Q1

-40°C 75°C

PROFI
NET

IEEE
1588

Ring

EN50155
EN50121-4

Industrial
EMC

MILD-STD
810F

IP67
IEC60529

SKU	Description	10/100 M12 ports	10/100 / 1000 M12 ports	1000 SFP slots	Max PoE Ports
	EMG8508	-	8	-	-
	EMG8508-4PoE	-	8	-	4
	EMG8508-8PoE	-	8	-	8
	EMG8508-HV	-	8	-	-
	EMG8510-2SFP	-	8	2	-
	EMG8510-4PoE-2SFP	-	8	2	4
	EMG8510-8PoE-2SFP	-	8	2	8
	EMG8510-2SFP-HV	-	8	2	-

Secure Routers

Introduction

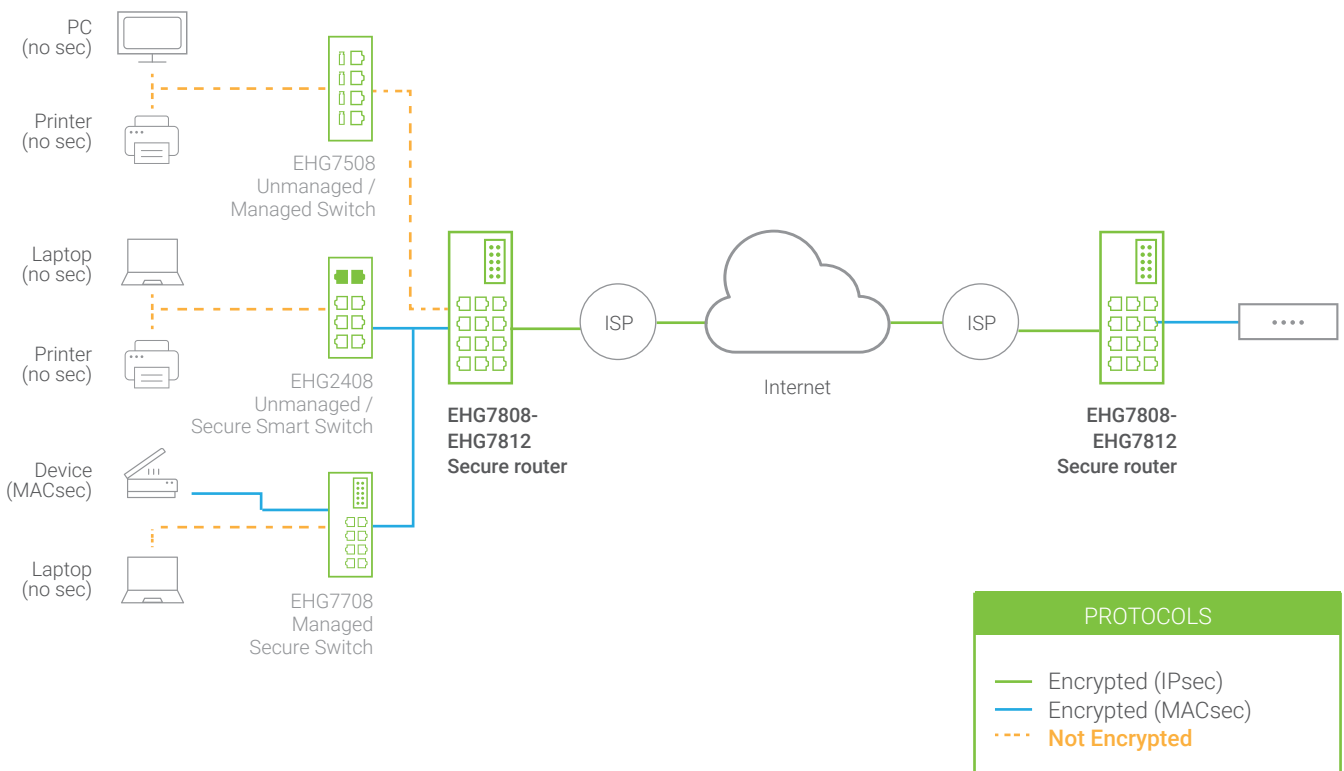
Recent trend has shown that the manufacturing industries and the utilities **are getting more automated, delocalized and more complex with the introduction of modern information technologies.**

For example, the smart grid system, which is an automated and distributed advanced energy delivery network, is one of the largest network infrastructure that connect many smart meters together and connect several traditional power plants with modern renewable power plants

This means that there will be more and more remotely controlled devices in the network.

Dedicated and private communication lines to every device is no longer viable due to the prohibitive cost of leased lines and some locations are not yet accessible by wired broadband or fiber backbone. **More network connections should be established either through the public Internet, where broadband internet access is available, or through the cellular wireless network.**

These networks are not under the full control of the smart grid utility operators or smart factories in Industry 4.0. If sensitive data that is conventionally relayed over private network is now transferred over public network without encryption, the system would be vulnerable to various threats and malicious activities such as network penetration, unauthorized control, interception, and eavesdropping.




As an industry leader, **ATOP's advanced secure routers provide not only an end-to-end secured encryption through the Internet with VPN over IPsec or OpenVPN, but also a hop-by-hop secured LAN (Local Area Network) by enabling all port compliance with IEEE 802.1AE (or MACsec encryption).** The router not only supports all previous features, but it also supports a powerful Layer-3 PoE Switch. Hardware based MACsec and hardware-accelerated IPsec guarantee impressive encryption-decryption performances that will not affect customer's Internet bandwidth.

All-in-one Secure Router and Layer-3 Secure Switch

All-in-one Industrial Gigabit Secure Router and Layer-3 PoE MACsec Switch



SKU	Description	10/100/1000 RJ45 WAN ports	10/100/1000 RJ45 LAN ports	1000 SFP WAN slots	10/100/1000 SFP LAN slots	Max MACsec enabled ports	Max PoE Ports
	EHG7808	8-Port Secure Router with 2 WAN ports	2	-	6	8	-
	EHG7808-4PoE	8-Port Secure Router with 2 WAN ports and 4 PoE ports	2	-	6	-	4
	EHG7808-4SFP	8-Port Secure Router with 2 WAN ports and 4 PoE ports	2	-	2	4	-
	EHG7808-2SFPW	8-Port Secure Router with 2 SFP WAN slots and 4 PoE ports	-	2	4	-	-
	EHG7808-4SFP-2SFPW	8-Port Secure Router with 2 SFP WAN slots and 4 SFP slots	-	2	-	4	-
	EHG7808-4PoE-2SFPW	8-Port Secure Router with 2 SFP WAN slots and 4 PoE ports	-	2	4	-	4
	EHG7812	12-Port Secure Router with 2 WAN ports	2	-	10	12	-
	EHG7812-4PoE	12-Port Secure Router with 2 WAN ports and 4 PoE ports	2	-	10	-	4
	EHG7812-8PoE	12-Port Secure Router with 2 WAN ports and 8 PoE ports	2	-	10	-	8
	EHG7812-4SFP	12-Port Secure Router with 2 WAN ports and 4 SFP slots	2	-	6	4	-
	EHG7812-4PoE-4SFP	12-Port Secure Router with 2 WAN ports, 4 PoE ports and 4 SFP slots	2	-	6	4	4
	EHG7812-8SFP	12-Port Secure Router with 2 WAN ports and 8 SFP slots	2	-	-	8	-
	EHG7812-2SFPW	12-Port Secure Router with 2 SFP WAN slots	-	2	10	-	-
	EHG7812-4PoE-2SFPW	12-Port Secure Router with 2 SFP WAN slots and 4 PoE ports	-	2	10	-	4
	EHG7812-8PoE-2SFPW	12-Port Secure Router with 2 SFP WAN slots and 8 PoE ports	-	2	10	-	8
	EHG7812-4SFP-2SFPW	12-Port Secure Router with 2 SFP WAN slots and 4 SFP slots	-	2	6	4	-
	EHG7812-4PoE-4SFP-2SFPW	12-Port Secure Router with 2 SFP WAN slots, 4 PoE ports and 4 SFP slots	-	2	6	4	4
	EHG7812-8SFP-2SFPW	12-Port Secure Router with 2 SFP WAN slots and 8 SFP slots	-	2	-	8	-

Industrial Wireless

ATOP's Industrial Wireless Access Points (AP) provide a reliable, robust, rugged, and cost-effective solutions to industrial applications that require wireless connection.


Equipped with a powerful 2 x 2 MIMO Radio interface supporting IEEE 802.11 a/b/g/n, 2.4 GHz and 5 GHz selectable bands, built-in DIN-Rail mount, ATOP's APs run in multiple modes such as - access point(AP) mode, wireless distribution bridge (WDS) mode or access point (AP) client operation mode.

The devices are designed to be fully operational between -20 and +60 °C.




Industrial Wireless Access Point, IEEE 802.11 a/b/g/n, DIN-Rail Metal Housing



SKU	Description	10/100 /1000 RJ45 ports	10/100 SFP ports	Fiber ports	Additional features
 AW5500	IEEE 802.11 a/b/g/n Access Point/ Bridge/Client	1	-	-	

Industrial Wireless Access Point, IEEE 802.11 b/g/n, DIN-Rail Metal Housing



SKU	Description	10/100 RJ45 ports	10/100 SFP ports	Fiber ports	Additional features
 AW5500C	IEEE 802.11 b/g/n Access Point/ Bridge/Client Supporting WiFi direct	1	-	-	On-click Wifi Pairing

Media Converters

Fiber connectivity is no longer a problem in industrial network with ATOP's media converters.

Ranging from entry-level media converters to smart media converters that support redundant-power and automatic speed negotiation, ATOP can help the customers in their transition from copper-based to fiber-based networks. **All products in this series are suitable for operational temperatures from -20 to +70 °C. Selected versions have operational temperatures between -40 and +70 °C.**



Industrial Smart Ethernet to Fiber converter, Auto Speed Negotiation, DIN-Rail



SKU	Description	10/100 RJ45 ports	10/100 /1000 RJ45 ports	Auto Negotiation SFP slots	Fiber ports	Rated distance
	EF23-1-1Fm-SC-2	Fast Ethernet to Fiber converter, SC connector, multi-mode, 2km	1			1 (multi-mode) 2 km
	EF23-1-1Fs-SC-30	Fast Ethernet to Fiber converter, SC connector, single-mode, 30km	1			1 (single-mode) 30 km
	EF24-1G-1Fm-SC-550M	Gigabit Ethernet to Fiber converter, SC connector, multi-mode, 550m	-	1	-	1 (multi-mode) 550 m
	EF24-1G-2Fm-SC-550M	Gigabit Ethernet to Fiber converter and repeater, SC connector, multi-mode, 550m	-	1	-	2 (multi-mode) 550 m
	EF24-1G-1Fs-SC-10K	Gigabit Ethernet to Fiber converter, SC connector, single-mode, 10 km	-	1	-	1 (single-mode) 10 Km
	EF24-1G-2Fs-SC-10K	Gigabit Ethernet to Fiber converter and repeater, SC connector, single-mode, 10 km	-	1	-	2 (single-mode) 10 Km
	EF24-1G-1Fs-SC-20K	Gigabit Ethernet to Fiber converter, SC connector, single-mode, 20 km	-	1	-	1 (single-mode) 20 Km
	EF24-1G-1SFP	Gigabit Ethernet to Fiber converter, SFP slot	-	1	1	1 (SFP slot) n/a
	EF24-1G-2SFP	Gigabit Ethernet to Fiber converter and repeater, SFP slot	-	1	2	2 (SFP slot) n/a

Serial to Fiber Media Converters, DIN-Rail mount, Metal Housing



SKU	Description	RS-232 RS-485 RS-422 TB5	Fiber ports	Rated distance
	SF63-TB-DB-1Fm-SC-2	1	1 (multi-mode)	2 Km
	SF63-TB-DB-1Fs-SC-30	1	1 (single-mode)	30 Km

Serial Device Servers

Introduction

ATOP's Serial to Ethernet Device Servers allows easy connection between RS-232/422/485 legacy devices to Ethernet through both wireless or wired connectivity.

These devices are specifically designed to allow industrial devices to be directly accessible from the local network or the Internet.

Our devices either in entry-level or industrial grade support 1 - 16 serial and are available in field-mount, DIN-rail mount, and rack-mount, making it a very powerful platform for legacy devices integration with modern network infrastructures.

With ATOP's Management Utility software, you will also be able to enable VirtualCom on the computer seamlessly using Ethernet or via any serial device you want.



Programmable Platform

And if **Serial Server is not your main application**, then consider one thing: **ATOP's Serial Device Servers** (selected versions only) can also be provided in a **Simply Programmable SDK version running Linux**. With the Programming guide, it is easy to develop applications for specific requirements.


Ask your sales representative for more information!

Entry level Serial Device Servers

ATOP's Entry-level Serial Device Servers provide 1 or 2-port RS-232/RS-422/RS-485 connectivity, and are suitable for simple and less demanding applications. These Serial Device Servers are available with a DB9 or TB5 connector with 2kV magnetic isolation. Selected versions are Industrial-EMC certified.

Entry Level Serial Device Server, Field Mount, Metal Housing



SKU	Description	RS-232 RS-485 RS-422 TB5	RS-232 RS-485 RS-422 DB9	10/100 RJ45 Ports	Additional features
	SE5002(DB)	-	1	1	
	SE5002-S5Sis(TB)	1	-	1	2kV Magnetic Isolation

Industrial EMC Serial Server, Field Mount, Metal Housing




SKU	Description	RS-232 RS-485 RS-422 TB5	RS-232 RS-485 RS-422 DB9	10/100 RJ45 Ports	10/100 Fiber ports	100 SFP slots	
	SE5001A	-	1	1			
	SE5001A-TB	1	-	1			
	SE5002D	-	2	1	-	-	
	SE5002D-TB	2	-	1	-	-	
	SE5002D-Fm	-	2	-	1 (multi)	-	
	SE5002D-Fs	-	2	-	1 (single)	-	
	SE5002D-TB-Fm	2	-	-	1 (multi)	-	
	SE5002D-TB-Fs	2	-	-	1 (single)	-	
	SE5002D-SFP	-	2	-	-	-	1
	SE5002D-TB-SFP	2	-	-	-	-	1

Wireless / Cellular Serial Device Servers

To convert between serial to Ethernet where cabling installation is an issue, ATOP's wireless serial servers provide a reliable and affordable solution, with one or two available ports and terminal block or DB9 connector. For selected versions which provide Industrial EMC compatibility, they support MIMO dual-antenna features and IEEE 802.11 a/b/g/n and 3G/4G/HSPA connectivity.

Industrial Wireless IEEE 802.11 b/g/n Serial Device Server, DIN-Rail



SKU	Description	RS-232 RS-485 RS-422 TB5	RS-232 RS-485 RS-422 DB9	10/100 RJ45 Ports	Additional features
	SW5501C	(1)	(1)	1	On-click Wifi pairing
	SW5502C-TB	-	2	1	On-click Wifi pairing
	SW5502C	2	-	1	On-click Wifi pairing

Industrial Wireless IEEE 802.11 a/b/g/n Serial Device Server, Industrial EMC




SKU	Description	RS-232 RS-485 RS-422 TB5	RS-232 RS-485 RS-422 DB9	10/100 1000 RJ45 Ports	Additional features
	SW5501	-	1	1	
	SW5501-TB	1	-	1	
	SW5501-Sis	1	-	1	2 kV isolation
	SW5502	-	2	1	
	SW5502-TB	2	-	1	
	SW5502-Sis	2	-	1	2 kV isolation

Industrial Cellular 3/4G Serial Device Servers, Digital I/O, DIN-Rail mount

NEW
2016 Q4

-40°C 75°C Industrial EMC IP30 IEC60529

SKU	2G/3G/HSPA	4G	RS-232 RS-485 TB5	RS-232 RS-485 DB9	10/100/1000 RJ45 Ports	Digital Inputs/ Digital Outputs	Additional features	
	SE5901B-D3G	X	-	1	1	-		
	SE5901B-IO-D3G	X	1+1*	-	1	2/2		
	SE5901B-IO-D3G-GPS	X	1+1*	-	1	2/2	GPS	
	SE5901B-4G	X	-	-	1	-		
	SE5901B-IO-4G	X	X	1+1*	1	2/2		
	SE5901B-IO-4G-GPS	X	X	1+1*	-	1	2/2	GPS
	SE5901B-4G-B	X	X	-	-	1	-	Battery function
	SE5901B-IO-4G-B	X	X	1+1*	-	1	2/2	Battery function
	SE5901B-IO-4G-GPS-B	X	-	1+1*	-	1	2/2	GPS / Battery function


* one TB sw-selectable RS485;RS422;RS232 and one TB RS232.

Advanced Serial Device Servers

ATOP's advanced serial device servers add wider temperature ranges (from -20 to +70 °C, with selected versions up to -40 to +85 °C), advanced EMC capabilities, and faster CPUs in order to provide advanced features and faster processing time. They are more suitable for challenging environments. Selected advanced products provide additional gigabit connectivity and can be powered through PoE (Power over Ethernet) rather than from the ordinary power supply.


Advanced Industrial Serial Device Servers, DIN-Rail Mount

-40°C 85°C Industrial EMC IP30 IEC60529

SKU	Description	RS232-RS485-RS422 TB5	RS-232 RS-485 RS-422 DB9	10/100 RJ45 Ports	Additional features	
	SE5901-DB	Industrial 2-Ethernet 1- Serial Device Server (DB)	-	1	2	
	SE5901-TB	Industrial 2-Ethernet 1- Serial Device Server (TB)	1	-	2	
	SE5901-DB-PoE	Industrial 2-Ethernet 1- Serial Device Server (DB), can be PoE Powered	-	1	2	PoE powered
	SE5901-TB-PoE	Industrial 2-Ethernet 1- Serial Device Server (TB), can be PoE Powered	1	-	2	PoE powered


Advanced Serial Device Servers, DIN-Rail Mount



SKU	Description	RS-232 RS-485 RS-422 TB5	RS-232 RS-485 RS-422 DB9	10/100 RJ45 Ports	Additional features
	SE5404D	-	4	2	
	SE5404D-TB	4	-	2	
	SE5404D-Sis	4	-	2	2 kV isolation


Advanced Industrial Serial Device Servers, DIN-Rail Mount



SKU	Description	RS-232 RS-485 RS-422 TB5	RS-232 RS-485 RS-422 DB9	10/100 RJ45 Ports	1000 Gigabit	Additional features
	SE5904D-DB-PoE	-	4	2	-	PoE-powered
	SE5904D-TB-PoE	4	-	2	-	PoE-powered
	SE5904D-Sis-PoE	4	-	2	-	PoE-powered
	SE5904D-G-DB-SFP	-	4	-	2	
	SE5904D-G-TB-SFP	4	-	-	2	
	SE5904D-G-Sis-SFP	4	-	-	2	3 kV isolation

Advanced Serial Device Servers, Rack-Mount




SKU	Description	RS-232 RS-485 RS-422 RJ45	10/100 RJ45 Ports	Additional features	
	SE5408A	Industrial 2-Ethernet 8-Serial Device Server with RJ45 connectors, 2.5 kV isolation	8	2	2.5 kV isolation
	SE5408A2-N	Industrial 2-Ethernet 8-Serial Device Server with RJ45 connectors	8	2	
	SE5416A	Industrial 2-Ethernet 16-Serial Device Server with RJ45 connectors, 2.5 kV isolation	16	2	2.5 kV isolation
	SE5416A2-N	Industrial 2-Ethernet 16-Serial Device Server with RJ45 connectors	16	2	

EN50155 – Railway specific Serial Device Servers





ATOP's railway serial servers support two serial connectivity ports (RS-232/RS-485/RS-422) and one Ethernet port and are enclosed into a waterproof IP68 rugged housing.

EN50155 Railway Waterproof Serial Device Server



Pic	SKU	Description	RS232- RS485 -RS422 M12	10/100 M12 Ports	Additional features
	SE8502-M12	Waterproof Ethernet to Serial device Server, EN 50155 certified	2	1	
	SE8502-Sis-M12	Waterproof Ethernet to Serial device Server, EN 50155 certified, 2 kV isolation.	2	1	2 kV isolation

Appendix: How to read the Brochure

	IP Rating	The device has the IP30 (Ingress Protection) rating. According to IEC60529, it is the classification of the degree of intrusion protection (the first digit) and water protection (the second digit). The higher the number, the higher the protection. IP30 devices have effective protection against tools and thick wires, but no protection against water. IP67 devices have absolute protection against dust and can be operated under one meter of water.
	DIN-Rail	This device can be DIN-Rail mounted. Please check the datasheet to confirm if the DIN-Rail kit is included.
	Rack-Mount	This device can be Rack-mounted (1U standard). Please check the datasheet to confirm if the Rack-mount kit is included.
	Operating Temperature	This device operates with 95% relative non-condensing humidity, within the maximum and minimum operating temperatures shown (-40 to 80 C here).
	Redundant Power input	This device is equipped with redundant power supply (for devices with embedded power supply) or redundant power supply input (for devices requiring external power supply).
	Relay Output	This device is embedded with a Relay output feature.
	Industrial EMC	This device is certified for being complying with the strictest EMC norms for Heavy Industrial Environments (e.g. EN 61000-6-2/EN 61000-6-4)
	MIL-STD Ruggedized	This device is complying with MIL-STD 810F, that which is a strict environmental and shock-vibration standard for military equipment.
	Railway Certified	This device is complying with EN50155 and EN50121-4, that define the environmental, vibration, and EMC requirements for devices used on Rolling stock or other Railway applications.



IEC 61850-3 Certified

This device is complying with IEC 61850-3. This defines the temperature and EMC isolation standards devices should comply to be used in IEC 61850 Power Grid networks.



ATEX Certified

This device is complying with the latest regulations in matter of Explosive or Potentially Explosive atmospheres (ATEX).



Advanced Security

This device is embedded with advanced security features such as hw-based MACsec Encryption or hw-accelerated VPN Encryption. MACsec protocol guarantees link security protecting you fro packet-sniffing, masquerading, and unauthorized access.



PROFINET ready

This device is Profinet Conformance Class B compatible



Layer-3 Switching

This device is capable of managing fast and reliable Layer-3 switching. This product provides additional advanced features in order to implement advanced security, such as MAC address filtering and IP address filtering. See datasheets for details.



Precision Timing

This device is supports hardware-based IEEE 1588v2 Precision Time Protocol transparent clock and software-based boundary clock. IEEE 1588v2 is the standard for a network synchronization with nanosecond accuracy.



Redundant Ring

This managed switch supports ERPS-RSTP-MRP (client) Ring topologies for network redundancy. ATOP's switches with this icon have a link recovery time less than 20 milliseconds.



2 x 2 MIMO Wireless

This wireless device is using multiple-input-multiple-output in order to exploit multipath wave propagation through two or more antennas. This feature enhances data transmission performance of the device.



WDS

This ATOP wireless AP (Access Point) device supports wireless distribution system (WDS) bridging. This feature allows the AP to act as a signal repeater in a multi-AP network.



New Product

This is a New ATOP's Product, planned to be released in Q1, 2017.



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