RHG7628 Series

INDUSTRIAL Rack-Mount Layer-3 MANAGED Modular Gigabit Ethernet PoE SWITCH

FEATURE HIGHLIGHTS

- Maximum 128Gbps switching capacity, 95.24Mpps throughput
- Rugged industrial design for -40 to +75°C harsh environment operation
- Flexible modular configuration, 3 Module-dedicated slots
- Up to 24 PoE ports, with maximum 720W of PoE power budget
- 4 x 1 Gigabit or 4 x 10 Gigabit SFP Uplink slots
- Up to 20 possible switch configurations, 2 security modules, and 4 power input versions
- ITU-T G.8032 ERPS Ring, RSTP, or MRP (Manager/Client) redundancy
- RIP, OSPF, Static Routing, PIM supported Layer-3 switching
- EN50155 / EN50121-4 Certified for Railway applications

PRODUCT DESCRIPTION

Flexible: ATOP's high-density RHG7628 Managed Rack-mount switch will provide you the flexibility your application needs. You will be able to choose among 8 different Layer-3 Routing Core versions (based on power supply and uplink port configurations) and five different 4/8-Port modules and customize your device in a very simple way.

Designed for PoE, in wide temperature: RHG7628 supports *up to* ***24 Gigabit ports in any 8 or 4-port multiple configuration***. Specifically designed for bringing power through Ethernet cable virtually anywhere, a ***maximum output Power over Ethernet of 720W over the 24 ports is allowed*** (PoE/PoE+ configuration - 802.3af/at). Available in ***4 power input variants***, it is EN 60950-1:2006 certified and designed to handle the harshest environments. Its fanless design and EMC Level 3 protection guarantee ***operations from -40 to +75°C.***

Powerful and versatile: RHG7628 supports ***IPv4 and IPv6 Static Routing, RIPv1/v2, OSPFv2, PIM-DM, PIM-SM, PIM-SSM, DVMRP and VRRP for Routing Redundancy***. Then, it embeds all features of RHG7528 (layer-2 version), allowing (through ERPS) network self-recovery down to 20ms on full load. Almost any redundant ring topology is supported, such as ITU-T G.8032 ERPS Ring, IEEE802.1D-2004 RSTP, STP, MSTP, MRP (Manager/Client), iA-Ring, iA-Chain and many compatible rings.

The RHG7628 Series is fully **EN50155-certified** to ensure reliable performance under a wide range of power supply conditions, and it complies with essential sections of **EN50121-4** for ground equipment.

Secure: The first Industrial Managed Secure Switch! Protect your LAN from Eavesdropping and impesronation through 802.1AE MACsec. With no additional latency and 100% Gigabit Throughput guarantee, dedicated modules can provide you the internal ultimate security solution.

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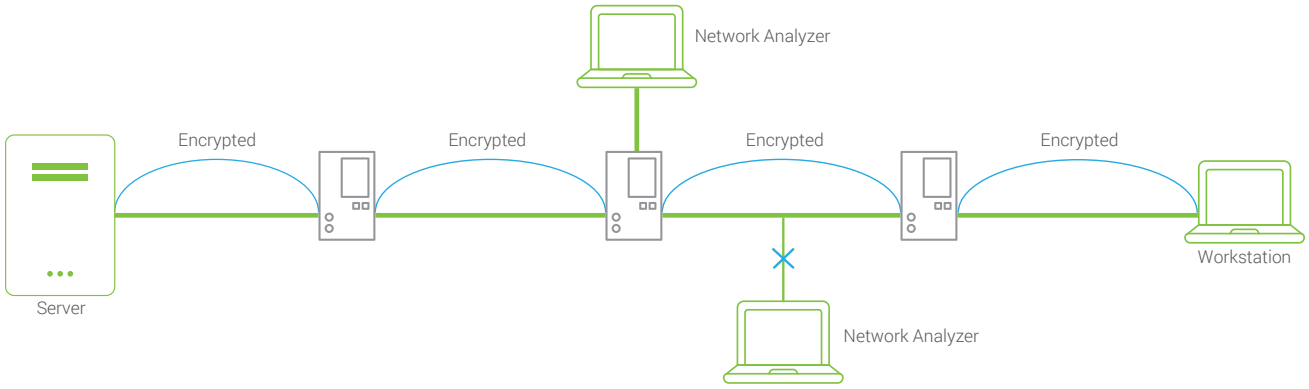
APPLICATION CASES

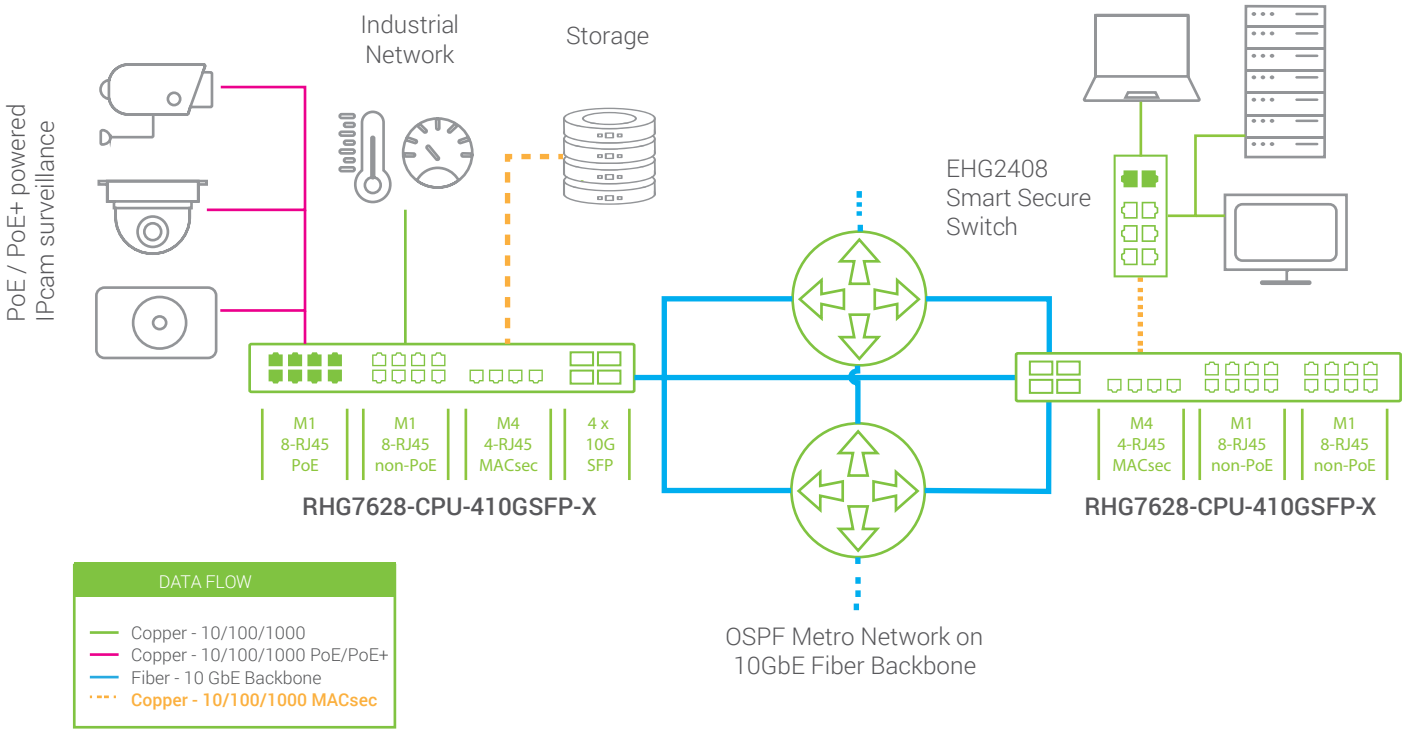
What is MACsec?

IEEE 802.1AE protocol (MACsec) provides—to the components that support it—authentication, integrity and confidentiality using strong crypto (AES-128 bit). Since the communication is encrypted hop-to-hop (so, decrypted upon receipt and encrypted again with a different key before forwarding), it can protect your network not only from wiretapping, masquerading, man-in-the-middle attacks and denial-of-service, but also from impersonation and replay attacks.
And that's not all. ***Since the encryption is carried out by hardware, the full Gigabit Bandwidth is preserved and no additional latency is added to the network.***



Application example

In the below network diagram you can see how easy it is to exploit all features of RHG7628. Different Switches are interconnected through a 10 Gigabit Ethernet Fiber backbone in an OSPFv2 Mesh. The device on the left for example powers the IPcam surveillance System through PoE/PoE+, provides Industrial-Grade connectivity to the Factory, and guarantees confidentiality to the information by a secured, encrypted, connection. The device on the right bridges the secure connection to the office, ensuring Gigabit-speed, no latency data security.



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CONFIGURATION EXAMPLE

How does it work?

RHG7628 configuration is as easy and immediate as you can imagine: pick any Core CPU unit from the catalogue, choosing among different power supply configurations and uplink speeds (RHG7628 provides 3 module-slots and 4 SFP uplinks, in either 1GbE or 10GbE speed). Then, choose the modules you want based on your needs. Install the modules and Power on!
It's all done. Just jump to Web, Console or Telnet configuration!

RHG7628-CPU-410GSFP-R Layer-3 Core unit, with 4 x 10 Gigabit SFP uplink slots and redundant AC power input

RHG7X28-M1
8-port Gigabit RJ45 PoE module

RHG7X28-M2
8-port Gigabit RJ45 module

RHG7X28-M5
4 port 100/1000 SFP MACsec module

24 port Layer-3 Managed Switch, with 8 Gigabit PoE ports, 8 Gigabit RJ45 ports, 4 100/1000 MACsec secure SFP slots and 4 x 1/10 GbE SFP uplink slots

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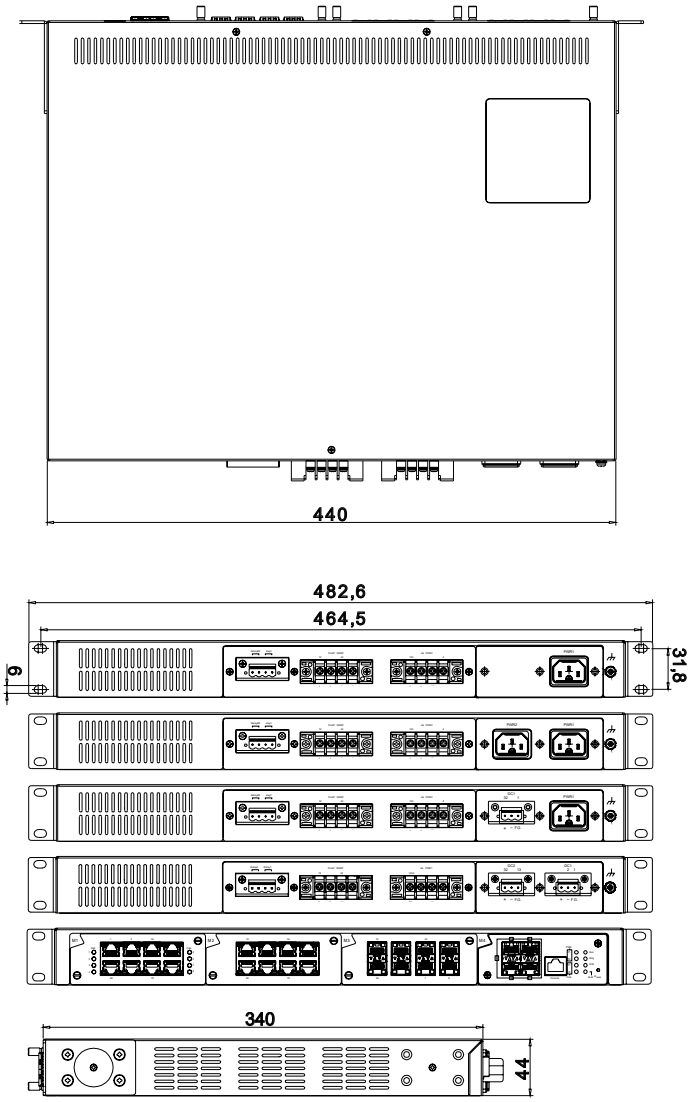
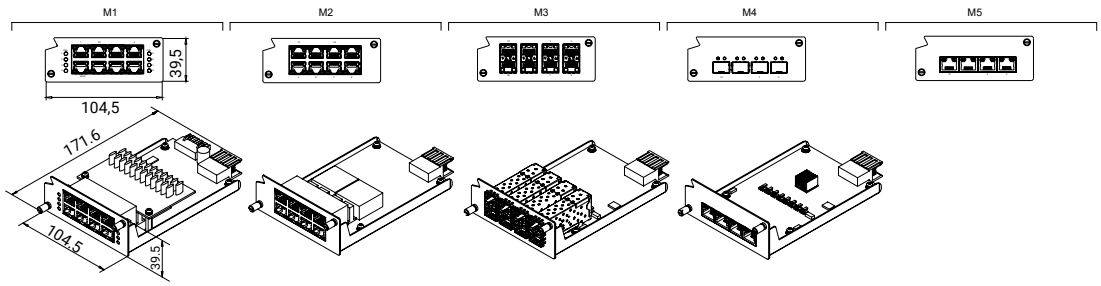
DIMENSIONS & LAYOUT

Switch core module



Modules



SPECIFICATIONS

Switch Core Technical Specifications		
Model Name	RHG7628	
Switch Properties		
Priority Queues	8	
VLAN Table	4096	
MAC-Based VLAN	512	
VLAN ID Range	VID 1 to 4094	
Trunk Group	4	
Static IGMP Groups	128	
Dynamic IGMP Groups	256	
MAC Table Size	16k	
Packet Buffer Size	1.5 MB	
Jumbo Frame	9216 Byte	
Switching Fabric Capacity	56 Gbps (1G uplinks) / 128 Gbps (10G uplinks)	
Maximum throughput	41.67 Mpps (1G uplinks) / 95.24 Mpps (10G uplinks)	
Ethernet Interfaces		
Standards	IEEE 802.3 for 10BaseT IEEE 802.3u for 100BaseT(X) IEEE 802.3ab for 1000BaseT(X) IEEE 802.3z for 1000BaseX IEEE 802.3ae For 10 Gigabit Ethernet Fiber IEEE 802.3x for Flow Control, back pressure flow control IEEE 802.1D-2004 for Spanning Tree Protocol IEEE 802.1w for Rapid Spanning Tree Protocol IEEE 802.1s for Multiple Spanning Tree Protocol IEEE 802.1Q for VLAN Tagging IEEE 802.1p for Class of Service IEEE 802.1X for Authentication IEEE 802.1ae for MAC security (MACsec) – on RHG7X28-M4 & RHG7X28-M5 IEEE 802.3ad for Port Trunk with LACP IEEE 802.3az for Energy Efficient Ethernet	
Protocols	IPv4, IPv6, IGMPv1/v2/v3, IGMP Snooping, GARP, GMRP, GVRP, SNMPv1/v2c/v3, SNMP Inform, ICMP, Telnet, SSH, DHCP Server/Relay/Client, DHCP Option 66/67/82, BootP, RARP, TFTP, SMTP, SMTP (Gmail), RMON, HTTP, HTTPS, Syslog, MRP (Manager/Client), LLDP, 802.1x, EAP, RADIUS, TACACS+, Mirror port, QoS, ACL DHCP Snooping, ARP Spoof Prevention, Dynamic ARP Inspection, MLD,UDLD, IP Source Guard, sFlow	
Layer-3 Switching Protocols	Routing: IPv4 and IPv6 Unicast static routing, RIP v1/v2, OSPFv2,BGPv4 Multicast: IGMPv1/v2/v3, DVMRP, PIM-DM, PIM-SM, PIM-SSM Routing Redundancy: VRRP (Virtual Router Redundancy Protocol)	
Redundancy	ITU-T G.8032 ERPS Ring, STP, RSTP, MSTP, Compatible Ring/Chain, U-Ring	
Time Synchronization	Network Synchronization	NTP Server/Client, SNTP
	Precision Network Synchronization	IEEE1588v1 OC/BC (Software) IEEE1588v2 E2E TC (Hardware) IEEE1588v2 OC/BC (Software)

Automation Profiles	Modbus/TCP status registers	
MIB	MIB II, IF-MIB, SNMPv2 MIB, BRIDGE-MIB, RMON MIB Group 1,2,3,9, RFC RFC 1157, RFC 1213, RFC 1215, RFC 1493, RFC 1643, RFC 1757, RFC 2011, RFC 2012, RFC 2013, RFC 2233, RFC 2571, RFC 2742, RFC 2819, RFC 2863, RFC 3411, RFC 3412, RFC 3413, RFC 3414, RFC 3415, RFC 2674	
Uplink Port	4 x 1 Gigabit or 4 x 10 Gigabit SFP	
Switching Module Slots	3	
Power Characteristics		
Rated Supply Voltage	Switch Core	DC version: redundant 48-57 VDC AC version: single 110-220 VAC Redundant AC version: dual 110-220 VAC Mixed AC/DC -Redundant: 1x 110-220VAC & 1x 48-57VDC
	PoE	2x 48-57 VDC
Input Voltage	Switch Core	DC version: redundant 48-57 VDC AC version: single 99-242 VAC Redundant AC version: dual 99-242 VAC Mixed AC/DC -Redundant: 1x 99-240VAC & 1x 48-57VDC
	PoE	2x 48-57 VDC
Max. Input Current	CPU board AC/ redundant AC: 64 W@110 VAC (with input current 0.6 A) CPU board redundant DC : 32.7 W@48 VDC (with input current 0.68 A) Full load of 802.3af PoE: 370 W@45 VDC (with input current 8.4 A) Full load of 802.3at PoE+: 720 W@51 VDC (with input current 14.4 A)	
Connectors	2x Lockable 5-pin terminal blocks for PoE power input (all models) 2x Lockable 3-pin terminal blocks for DC power input (DC models) 1-2x AC power input (1x for non-redundant/-MR models; 2x for -R model) 1x Lockable 3-pin terminal blocks for DC power input (-MR model)	
Relay Output	2 x Relay Output with current carrying capacity of 1A @ 24 VDC	
Reverse Polarity Protection	Yes	

SPECIFICATIONS

Switching Modules

Technical Specifications

Model Name	RHG7X28-M1	RHG7X28-M2	RHG7X28-M3
Description	8-Port RJ45 PoE module	8-Port RJ45 module	8-Port SFP module
Properties			
PoE Power per port	15.4/30W (802.3af/at)	-	-
Total Max Power	240 W	-	-
Number of ports	8	8	8
Port speed	10/100/1000 BASE-T(X)	10/100/1000 BASE-T(X)	100/1000 BASE-F(X)
Interface	RJ45	RJ45	SFP
Dimensions	104.5 x 171.6 x 39.5 mm	104.5 x 171.6 x 39.5 mm	104.5 x 171.6 x 39.5mm
Weight	550 g	500 g	450 g
Fixing	2 x screws (included)	2 x screws (included)	2 x screws (included)

Secure Modules

Technical Specifications

Model Name	RHG7X28-M4	RHG7X28-M5
Description	4-Port RJ45 MACsec Secure module	4-Port SFP MACsec Secure module
Properties		
PoE Power per port	-	-
Total Max Power	-	-
Number of ports	4	4
Port speed	10/100/1000 BASE-T(X)	100/1000 BASE-F(X)
Interface	RJ45	SFP
Dimensions	104.5 x 171.6 x 39.5mm	104.5 x 171.6 x 39.5mm
Weight	500g	500g
Fixing	2 x screws (included)	2 x screws (included)

REGULATORY APPROVALS

Regulatory Approvals				
Safety	UL 60950-1 2nd Ed. /CSA C22.2 No.60950-1-07 2nd Ed. / EN 60950-1 / UL 62368-1 / IEC 62368-1			
EMC	FCC Part 15, Subpart B, Class A EN 55032, EN 55024, EN 61000-3-2, EN 61000-3-3, EN 61000-6-2, EN 61000-6-4			
Test	**Item**		**Value**	**Level**
IEC 61000-4-2	ESD	Contact Discharge Air Discharge	±8 kV ±15 kV	4 4
IEC 61000-4-3	RS	Enclosure Port	10(V/m), 80-1000 MHz	3 *
IEC 61000-4-4	EFT	AC Power Port DC Power Port Signal Port	±2.0 kV ±2.0 kV ±2.0 kV	3 3 4
IEC 61000-4-5	Surge	AC Power Port AC Power Port DC Power Port DC Power Port Signal Port	Line-to-Line ± 1.0 kV Line-to-Earth ± 2.0 kV Line-to-Line ± 1.0 kV Line-to-Earth ± 2.0 kV Line-to-Earth ± 2.0 kV	3 3 3 3 3
IEC 61000-4-6	CS	0.15-80 MHz	10V rms	3 *
IEC 61000-4-8	PFMF	(Enclosure)	AC 30A/m	4
IEC 61000-4-11	DIP	AC Power Port	-	-
Shock	MIL-STD-810G Method 516.5			
Freefall	MIL-STD-810F Method 516.5			
Vibration	MIL-STD-810F Method 514.5 C-1 & C-2			
Rail Traffic	EN50155 / EN50121-4 Certified			
MTBF	12.20 years			
Warranty	5 years			
RoHS	Yes			

* EMC level 3 on CS/RS pass conditional to the use of Shielded Ethernet Cable

ORDERING INFORMATION

Core Switch Ordering Information

Model Name	Part Number	Description				
		1Gb Uplink SFP	10Gb Uplink SFP	110-220 VAC input	48-57 VDC input	48-57 VDC PoE input
RHG7628-CPU-4SFP	1P1RHG7628CPU1G	4	-	1	-	2
RHG7628-CPU-4SFP-R	1P1RHG7628CPU2G	4	-	2	-	2
RHG7628-CPU-4SFP-DC	1P1RHG7628CPU3G	4	-	-	2	2
RHG7628-CPU-410GSFP	1P1RHG7628CPU4G	-	4	1	-	2
RHG7628-CPU-410GSFP-R	1P1RHG7628CPU5G	-	4	2	-	2
RHG7628-CPU-410GSFP-DC	1P1RHG7628CPU6G	-	4	-	2	2
RHG7628-CPU-4SFP-MR	1P1RHG7628CPU7G	4	-	1	1	2
RHG7628-CPU-410GSFP-MR	1P1RHG7628CPU8G	-	4	1	1	2

Ordering information

Model name	Part Number	Description
RHG7X28-M1	1P1RHG7X28M101G	Module with 8x Gb PoE RJ-45
RHG7X28-M2	1P1RHG7X28M201G	Module with 8x Gb RJ-45
RHG7X28-M3	1P1RHG7X28M301G	Module with 8x Gb SFP Slots
RHG7X28-M4	1P1RHG7X28M401G	Module with 8x Gb MACsec RJ-45
RHG7X28-M5	1P1RHG7X28M501G	Module with 8x Gb MACsec SFP Slots

Optional Accessories

Model name	Part Number	Description
AC power cable for RHG7X28 (US)	50801341G	RHG7X28 US AC Power Cable (SS004-240)
AC power cable for RHG7X28 (EU)	50801351G	RHG7X28 EU AC Power Cable (SS004-241)
SDR-240-48	50502401480001G	240W/5A DIN-Rail 48-55VDC power supply 88-264VAC / 124-370VDC input
SDR-480-48	50504801480001G	480W/10A DINRail 48-55VDC power supply 88-264VAC /124-370VDC input
AXFD-1314-0523	522AXFD1314001G	SFP Transceiver, 155Mbps, 1310nm, Multi-mode, 2km, -40°C to +85°C, DDMI
AXFD-1314-0553	522AXFD1314011G	SFP Transceiver, 155Mbps, 1310nm, Single-mode, 30km, -40°C to +85°C, DDMI
AXGD-5854-0513	522AXGD5854001G	SFP Transceiver, 1250Mbps, 850nm, Multi-mode, 550m, 3.3V, -40°C to +85°C, DDMI
AXGD-1354-0523	522AXGD1354001G	SFP Transceiver, 1250Mbps, 1310nm, Multi-mode, 2km, 3.3V, -40°C to +85°C, DDMI
AXGD-1354-0533	522AXGD1354011G	SFP Transceiver, 1250Mbps, 1310nm, Single-mode, 10km, 3.3V, -40°C to +85°C, DDMI
AXGD-3354-0593	522AXGD3354001G	SFP Transceiver, 1250Mbps, 1310nm, Single-mode, 40km, 3.3V, -40°C to +85°C, DDMI
AXXE-5886-05B3	522AXXE5886001G	SFP Transceiver, 10Gbps, 850nm, Multi-mode, 300m, -40°C to +85°C