

Stronger Grids, Smarter Security

Power applications face increasing cybersecurity threats as critical infrastructures become more connected. To ensure reliable and secure operation, the international standard IEC 62443 provides a recognized framework for protecting industrial control systems against cyber risks. ORing's substation products are IEC 62443-4-2 certified, delivering trusted security and compliance for power and utility networks.

★ **Cyber-hardened IEC 62443-4-2** ★
L2 Product Spotlight

Optimized for Renewable and Distributed Power Systems



IGS-9084GP-LA
Gigabit Ethernet Switch
• 8GE + 4G SFP



IGPS-9084GP-LA
Gigabit PoE Switch
• 8G/PSE + 4G SFP



IGS-9168GP
Gigabit Ethernet Switch
• 16GE + 8G SFP



RGPS-92222GCP
Gigabit PoE Switch
• 22G/PSE + 2G Combo PSE + 2G SFP



IEC 61850-3 Certified – Substation-Grade Reliability



IGS-P9812GP
Substation Switch
• 8GE + 12 SFP



IGS-P9164GC
Substation Switch
• 16GE + 4G Combo



RES-P9242GCL
Substation FE Switch
• 24FE + 2G Combo



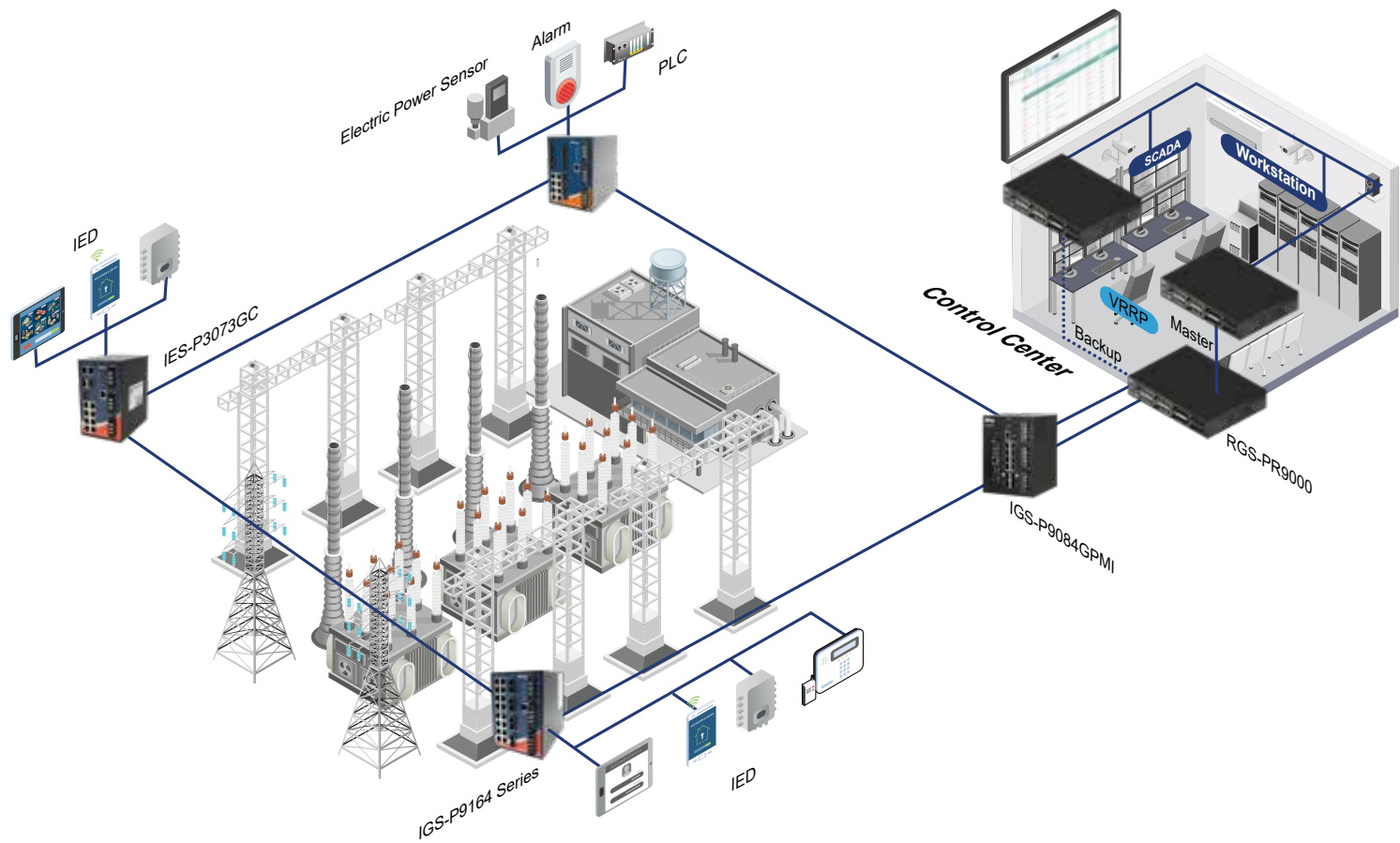
RGS-P9000
Substation Modular Switch
• 4-slots



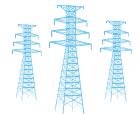
Where Reliability Meets Resilience: Intelligent Protection for Modern Substations



Powerful, Reliable, and Secure Networking



★ What We Offer ★



IEC61850

High-availability Network

- IEC 61850-3/IEEE 1613 certified products
- Zero-time recovery: IEC 62439-3 HSR/PRP
- Network redundancy



Secure OT Networks

- Our Ethernet switches certified to IEC 62443-4-2
- Open-Vision Pro integrates with FortiGate to deliver a co-prevention solution
- Automated vulnerability testing — ensuring every product is **Secure by Design**



Optimize Transmission Quality

- IEC 61850 QoS
- Protect from EMI: Multiple fiber design
- 10Gb/s connection

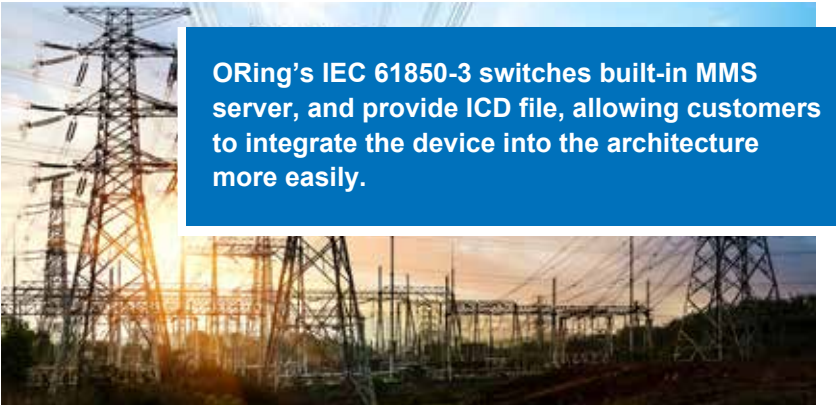
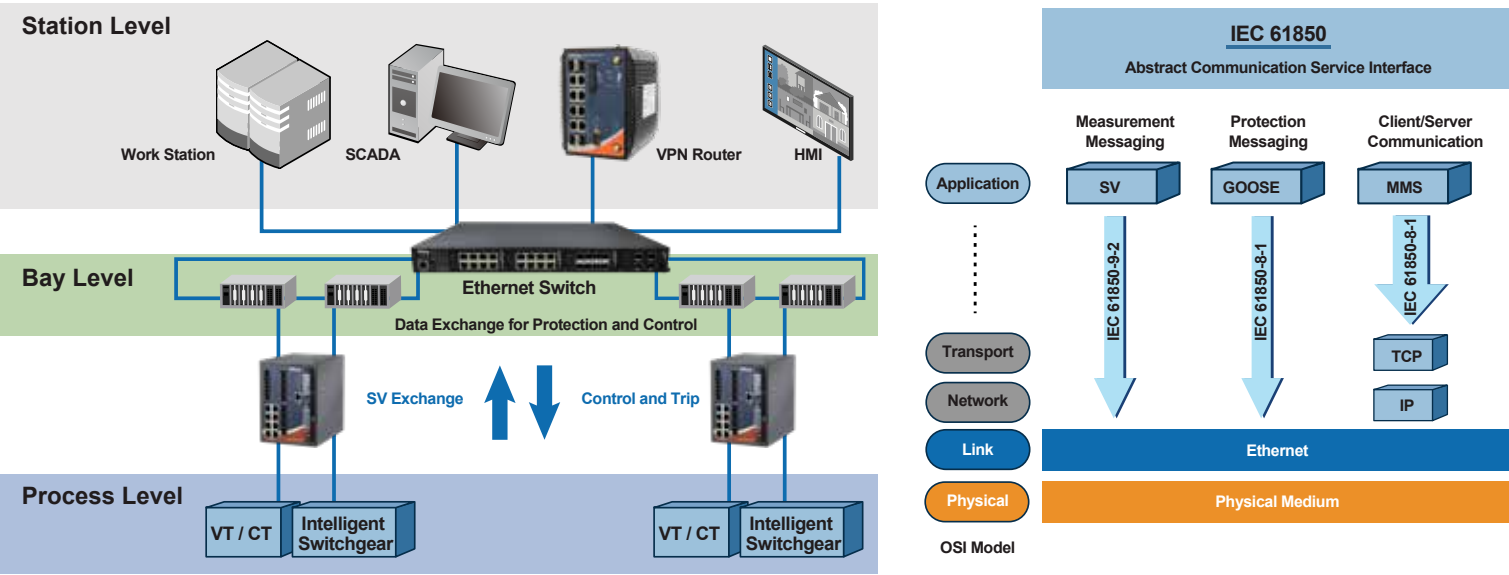


High Compatibility

- Hardware-based IEEE 1588 V2 (PTP)
- Modbus TCP and Ethernet/IP
- Built-in MMS server

About IEC 61850 Substation

IEC 61850 revolutionized substation automation by solving the challenge of interoperability between devices from different manufacturers. The standard defines standardized object models that represent both equipment and functions consistently across all compliant devices, ensuring devices communicate effectively and respond to events predictably



ORing's IEC 61850-3 switches built-in MMS server, and provide ICD file, allowing customers to integrate the device into the architecture more easily.

- MMS** (Manufacturing Message Specification)
For monitoring substation status
- GOOSE** (Generic Object Oriented Substation Events)
For status updates and sending command requests
- SV** (Sampled Values)
For transmitting power line current and voltage values



IEC 61850 Networking Requirements

- High Reliability
- Real-Time Communication
- VLAN Segmentation
- Priority Control



IEC 62443 Countermeasures with ORing

- HSR, PRP, RSTP, MSTP, O-Ring, O-Chain, MRP, and G.8032 ERPS ensure network reliability.
- Full support for GOOSE, SV, and MMS access control to meet low-latency networking demands.
- Secure Segmentation: VLAN, ACL, and subnetting for clear OT/IT separation.
- Prioritized Performance: QoS guarantees low-latency delivery for GOOSE and SV traffic.

“ With Secure Development Lifecycle and Shift-Left Security, we build cybersecurity into every power solution.”

Modular Ethernet Switches



RGS-P9000 (Layer 2) / RGS-PR9000 (Layer 3)

- 4 slots for optional modules, up to 28 ports
- Support IEEE 1588v2 clock synchronization
- Support for multiple MRP rings and domains
- Supports IEC 62439-3 HSR/PRP (with SWM-20GT-HSR module)
- Dual power input: LV 24-72VDC or HV 100-240VAC / 100-370VDC



IGS-P9084GPMI

- 8 GE + 4 100/1G SFP ports
- 1 slot for optional module
- Support IEEE 1588v2 clock synchronization
- Support for multiple MRP rings and domains
- Supports IEC 62439-3 HSR/PRP (with SWM-20GT-HSR module)
- Operating temperature: -40 to 85°C
- Dual power input: LV 12-48VDC or HV 85-264VAC / 88-300VDC

Optional Module List

Ethernet

For IGS-P9084GPMI / RGS-P9000 slot 1-3 / RGS-PR9000 slot 1-3



SWM-80GT
8 GbE RJ45



SWM-60GT-M12
6 GbE M12



SWM-04FX-SC
4-port FX SC



SWM-04FX-ST
4-port FX ST



SWM-04GF-SC
4-port 1G FX SC



SWM-04GF-ST
4-port 1G FX ST



SWM-06TIL
• 6-port 10Base-T1L
• Single-pair Ethernet (SPE)



SWM-08GP
8 100/1000 SFP socket



SWM-20GT-HSR
• 2 Gigabit Combo
• Supports HSR/PRP

For RGS-P9000 slot 4 / RGS-PR9000 slot 4



SWM-04GP_4
4-port 1G SFP socket



SWM-02GP+_4
2-port 10G SFP+ socket



SWM-04GP+_4
4-port 10G SFP+ socket



SWM-04GF-SC_4
4-port 1G FX SC



SWM-04GF-ST_4
4-port 1G FX ST

Wireless



APM-820
• 802.11n/ac WIFI
• 1GE RJ45



RTM-1002-D5G
• 5G NR
• 1GE RJ45

X86 CPU Module



MFS-CE10
• Atom® X6413E
• 1GE RJ45

Serial



DSM-221-I
2-port RS422/485



DSM-141
4-port RS232



IOM-11400
• 4 AI, 1 DI, 1DO
• 1-port RS485



IOM-44000
• 4 DI, 4 DO
• 1-port RS485

Reliability and Availability in Substations

The foundation of reliable substation operation rests on three key pillars, ensuring stability and dependability even under harsh conditions.



Error Minimization

Robust hardware design with comprehensive EMC protection safeguards sensitive electronics in harsh environments. IEC 61850-3 specifies EMC requirements for substation equipment, while IEEE 1613 defines environmental and testing standards for networking devices, covering extreme temperatures, EMI, and mechanical stress.



Rapid Detection

Digital Diagnostic Monitoring (DDM) is transforming fiber optic maintenance in substations by enhancing traditional SFP monitoring capabilities to deliver comprehensive oversight of transceivers. This proactive system monitors critical parameters in real-time.



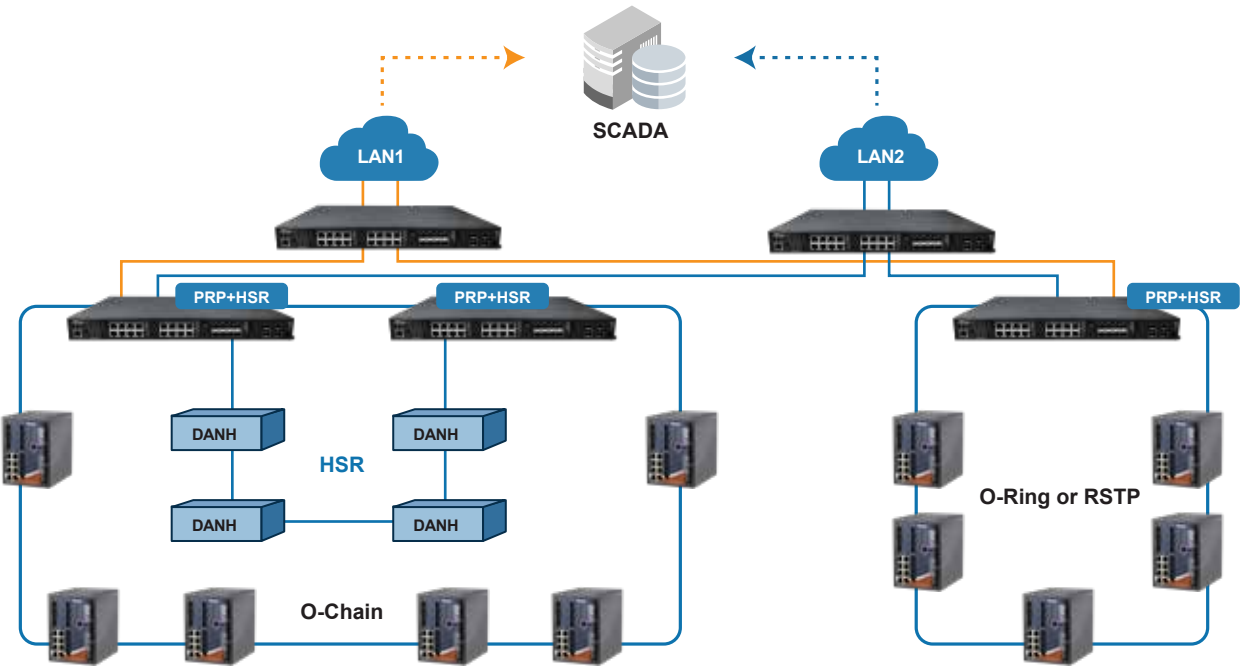
Efficient Recovery

Standard network segments often use RSTP with recovery times of a few seconds, while mission-critical applications require zero-recovery-time protocols like PRP and HSR. These approaches support scalability with rings and chains, providing tailored resilience for different criticality levels.



Precise time synchronization

IEEE 1588 V2 is essential within a substation to guarantee the synchronized operation of measurement devices linked to the power grid. ORing's IEC 61850-3 Ethernet switches support 2 PTP profiles: IEEE C37.238 and IEC 61850-9-3. The precision of these clocks can range from milliseconds to microseconds, contingent upon the specific application.



ORing Industrial Networking Corp

3F., No.542-2, Zhongzheng Rd., Xindian Dist., New Taipei City 23148, Taiwan
TEL: + 886-2-2218-1066
FAX: + 886-2-2218-1014
www.ORingNet.com
E-mail: info@oringnet.com



LinkedIn



ORingNet