

## EHG9508 EHG9512 Series

## 8 or 12-Port IEC61850-3 Certified Industrial Managed Gigabit Switch

### FEATURE HIGHLIGHTS



- IEC61850-3 Certified
- Up to 6 or 8 10/100/1000 BASE-T(X) ports and 2 or 4 1000 BASE-X SFP ports
- IEEE1588v2 Precision Time Protocol support, with nanosecond-accurate Hardware-based E2E Transparent clock and Software Boundary Clock
- ERPS and Compatible Ring (recovery time < 20ms @ 40 switches), STP/RSTP/MSTP/MRP (Client) for network redundancy
- Remote management over Web browser, Telnet, Serial console, Utility
- Security features based on IEC62443-4-2

### PRODUCT DESCRIPTION

The EHG9508/12 Series is a highly reliable Gigabit Managed Ethernet Switch. Its IEC61850-3 compliance allows it to be core part in the IEC 61850 network in power substations and control centers. The series is also certified by DNL.GL (former KEMA) to meet the IEC61850 applications and to support the transmission of GOOSE messages used for fast communication between IEDs.

The **IEEE1588 Precision Time Protocol capabilities allow the deployment of EHG9508/EHG9512 Series in networks with stringent time Synchronization requirements.** It can act as hw-assisted End-to-End transparent clock providing nanosecond-accurate correction-field packet-update and as a sw-assisted boundary clock.

The device equips up to 8 10/100/1000BASE-T(X) RJ-45 ports and up to 4 1000BASE-X SFP ports. **With its high performance, it provides network redundancy self-recovery mechanisms is less than 20ms on full load that enables the user to build a reliable network through a redundant ring topology.** ERPS/STP/MSTP/RSTP/MRP (Client) and many other compatible rings are supported. With a Multifunctional web dashboard, it offers intelligent features such as Quality of service (QoS), Virtual LAN (VLAN), IGMP, IGMP Snooping, Port mirroring and security. To prevent network intrusions, it is necessary to have a good accessing control mechanism that can identify, authenticate and authorize users. EHG9508/12 support user account, password policy, and authentication interface managements functions that comply with IEC62443 standard.

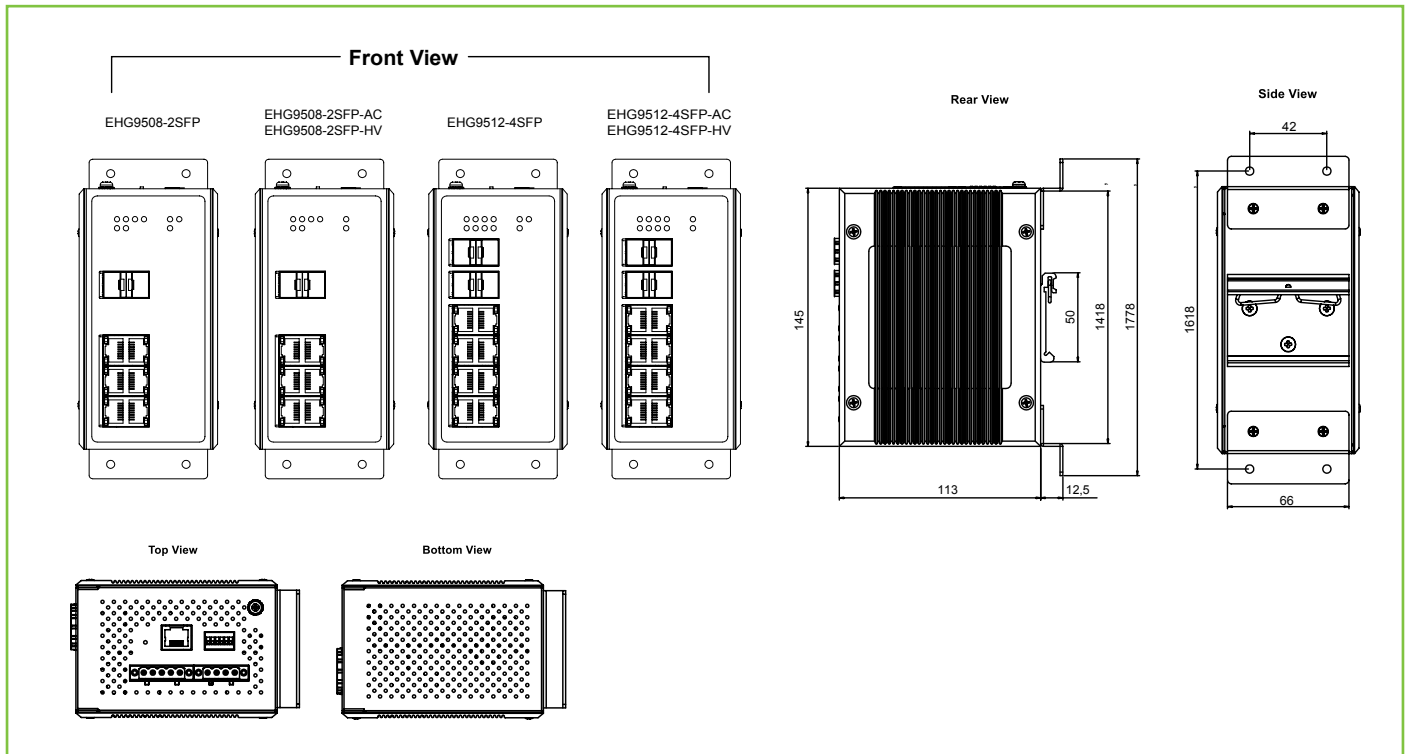
The EHG9508/12 Series is designed to be used in core power utilities. It provides dual redundant DC model (single input AC & HV models) with Reverse Polarity Protection and two sets of relay that allow the user build up a stand-alone fault alarm system. Its wide operating temperature of -40 to 85°C and DIN-Rail mounting capacities make it suitable to be used in remote substations where harsh environment and reliability is an issue.

## SPECIFICATIONS

| Technical Specifications |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Model Name               | EHG9508<br>EHG9512                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Ethernet                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Standards                | IEEE 802.3 for 10BASE-T<br>IEEE 802.3u for 100BASE-T(X)<br>IEEE 802.3ab for 1000BASE-T<br>IEEE 802.3z for 1000BASE-X<br>IEEE 802.3x for Flow Control/ Back pressure control<br>IEEE 802.1d-2004 for Spanning Tree Protocol<br>IEEE 802.1w for Rapid Spanning Tree Protocol<br>IEEE 802.1s for Multiple Spanning Tree Protocol<br>IEEE 802.1q for VLAN Tagging<br>IEEE 802.1p for Class of Service<br>IEEE 802.1x for Authentication                                                                                                                    |
| 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, NTP Server/Client, SNTP, SMTP, SMTP (Gmail), RMON, HTTP, HTTPS, Syslog, MRP (Client), LLDP, IEEE 1588 PTP V1/V2, IEEE 1588 Hardware-Assisted End-to-End Transparent Clock and Software-assisted Boundary Clock, MRP (Client), 802.1x, EAP, RADIUS, TACACS+, Mirror port, QoS, ACL, Serial Console, U-Ring, STP, RSTP, MSTP, Redundancy Compatible Ring, Voice VLAN, sFlow |
| Redundancy               | ITU-T G.8032 ERPS, STP, RSTP, MSTP, MRP(Manager/Client), Compatible Ring/Chain, U-Ring                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Automation Profiles      | Modbus/TCP status registers                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| SNMP MIB                 | MIB II, IF-MIB, SNMPv2 MIB, BRIDGE-MIB, RMON MIB Group 1,2,3,9, 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                                                                                                                                                                                                                                                                                           |
| Power                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Rated Supply Voltage     | 24-57 VDC<br>100-240 VAC for AC series<br>110-370 VDC for HV Series                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Input Voltage            | 19.2-62.7 VDC<br>85-264 VAC for AC series<br>110-370 VDC for HV Series                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Input Current (System)   | 0.63A @ 24 VDC<br>0.16A @ 100 VAC for AC series<br>0.12A @ 110 VDC for HV series                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

|                                                                                                               |                                                                                                                                                                                                                                                                             |
|---------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Power Redundancy                                                                                              | Dual redundant DC model / Single input AC & HV models                                                                                                                                                                                                                       |
| Connector                                                                                                     | 5-Pin 5.08mm Lockable Terminal Block                                                                                                                                                                                                                                        |
| Reverse Polarity Protection                                                                                   | Yes                                                                                                                                                                                                                                                                         |
| <b>Interfaces</b>                                                                                             |                                                                                                                                                                                                                                                                             |
| RJ45 Ports<br>Fiber Optics Ports<br>LED Indicators<br>Console<br>Relay Output<br>DIP Switches<br>Reset Button | Up to 8 10/100/1000BASE-T(X) auto negotiation speed<br>Up to 4 1000BASE-X SFP slot<br>PWR1, PWR2, Alarm, Run, Ring, Ring Master, RJ-45 Link/Speed, SFP Link, RS232 (RJ45 connector)<br>2 relay outputs with current carrying capacity of 1A @ 24 VDC<br>Ring Control<br>Yes |
| <b>Physical Characteristics</b>                                                                               |                                                                                                                                                                                                                                                                             |
| Housing                                                                                                       | IP30 SPCC, Black housing<br>(Upgradeable to IP40. Please contact your sales representative for details.)                                                                                                                                                                    |
| Dimension (W x H x D)                                                                                         | 77 x 145 x 113 mm                                                                                                                                                                                                                                                           |
| Operating Temperature                                                                                         | -40°C to 85°C (-40°F to 185°F) / -40°C to 70°C (-40°F to 158°F) For UL                                                                                                                                                                                                      |
| Weight                                                                                                        | 1,000g (AC/HV versions) / 1,200g (other)                                                                                                                                                                                                                                    |
| Installation                                                                                                  | DIN-Rail , Wall mount (optional kit)                                                                                                                                                                                                                                        |
| <b>Environmental Limits</b>                                                                                   |                                                                                                                                                                                                                                                                             |
| Operating Temperature<br>Storage Temperature<br>Ambient Relative Humidity                                     | -40°C to 85°C (-40°F to 185°F) / -40°C to 70°C (-40°F to 158°F) For UL<br>-40°C to 85°C (-40°F to 185°F)<br>5% to 95% RH, 55°C (Non-condensing)                                                                                                                             |

## DIMENSIONS & LAYOUT



## REGULATORY APPROVALS

| Regulatory Approvals |                                                                                                                |                   |                                                                                                           |        |
|----------------------|----------------------------------------------------------------------------------------------------------------|-------------------|-----------------------------------------------------------------------------------------------------------|--------|
| Safety               | UL/CUL/IEC(CB) 61010-2-201                                                                                     |                   |                                                                                                           |        |
| Industry Specific    | IEC61850-3 (Including 6.10.3 Seismic test), IEEE 1613                                                          |                   |                                                                                                           |        |
| EMC                  | FCC Part 15, Subpart B, Class A<br>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 | ±8KV                                                                                                      | 4      |
|                      |                                                                                                                | Air Discharge     | ±15KV                                                                                                     | 4      |
| IEC 61000-4-3        | RS                                                                                                             | 80-1000MHz        | 20(V/m)                                                                                                   | 3      |
|                      |                                                                                                                | 1.0-3.0GHz        | 10(V/m)                                                                                                   | 3      |
| IEC 61000-4-4        | EFT                                                                                                            | AC Power Port     | ±4.0kV @5.0kHz                                                                                            | 4      |
|                      |                                                                                                                | DC Power Port     | ±4.0kV @5.0kHz                                                                                            | 4      |
|                      |                                                                                                                | Signal Port       | ±4.0kV @5.0kHz                                                                                            | 4      |
| IEC 61000-4-5        | Surge                                                                                                          | AC Power Port     | Line-to Line ±2.0kV                                                                                       | 4      |
|                      |                                                                                                                | AC Power Port     | Line-to Earth ±4.0kV                                                                                      | 4      |
|                      |                                                                                                                | DC Power Port     | Line-to Line ±1.0kV                                                                                       | 3      |
|                      |                                                                                                                | DC Power Port     | Line-to Earth ±2.0kV                                                                                      | 3      |
|                      |                                                                                                                | Signal Port       | Line-to Earth ±4.0kV                                                                                      | 4      |
| IEC 61000-4-6        | CS                                                                                                             | AC Power Port     | 10V, 150kHz~80MHz, 80% AM                                                                                 | 3      |
|                      |                                                                                                                | DC Power Port     | 10V, 150kHz~80MHz, 80% AM                                                                                 | 3      |
|                      |                                                                                                                | Signal Port       | 10V, 150kHz~80MHz, 80% AM                                                                                 | 3      |
| IEC 61000-4-8        | PFMF                                                                                                           | Enclosure         | 100A/m continuous,<br>1000A/m for 1S                                                                      | 5<br>5 |
| IEC 61000-4-11       | DIP                                                                                                            | AC Power Port     | Drop 70% 3 times/S (1 Period)<br>Drop 40% 3 times/1mS (50 Period)<br>Drop 100% 3 times/50mS (5&50 Period) | N/A    |
| RoHS II              | Yes                                                                                                            |                   |                                                                                                           |        |
| MTBF                 | 20 Years                                                                                                       |                   |                                                                                                           |        |

Notes: All series is UL61010-2-201 certified, except \*HV series

## ORDERING INFORMATION

### Ordering information

| Model name      | Part Number     | Description                                    |
|-----------------|-----------------|------------------------------------------------|
| EHG9508-2SFP    | 1P1EHG95080001G | 2P*1000FX SFP; 6P*1000TX RJ45; Power input: DC |
| EHG9508-2SFP-HV | 1P1EHG95080002G | 2P*1000FX SFP; 6P*1000TX RJ45; Power input: HV |
| EHG9508-2SFP-AC | 1P1EHG95080003G | 2P*1000FX SFP; 6P*1000TX RJ45; Power input: AC |
| EHG9512-4SFP    | 1P1EHG95120001G | 4P*1000FX SFP; 8P*1000TX RJ45; Power input: DC |
| EHG9512-4SFP-HV | 1P1EHG95120002G | 4P*1000FX SFP; 8P*1000TX RJ45; Power input: HV |
| EHG9512-4SFP-AC | 1P1EHG95120003G | 4P*1000FX SFP; 8P*1000TX RJ45; Power input: AC |

### Optional Accessories

| Model name               | Part Number     | Description                                                                |
|--------------------------|-----------------|----------------------------------------------------------------------------|
| Wall Mount Set           | 70100000000056G | 45.4 x 22.8 x 1.5 mm Aluminum wall mount Kit with screw                    |
| CBL-RJ45(8P)-DB9(F)-90-C | 50891971G       | RJ45 to DB9 Female Cross Over Console Cable, 90cm                          |
| SDR-75-24                | 50500752240001G | 75W/3.2A DIN-Rail 24VDC power supply 88~264VAC / 124~370VDC input          |
| AXGD-5854-0513           | 522AXGD5854001G | SFP Transceiver, 1250Mbps, 850nm, Multi-mode, 550m, 3.3V, -40~85°C, DDMI   |
| AXGD-1354-0523           | 522AXGD1354001G | SFP Transceiver, 1250Mbps, 1310nm, Multi-mode, 2km, 3.3V, -40~85°C, DDMI   |
| AXGD-1354-0533           | 522AXGD1354011G | SFP Transceiver, 1250Mbps, 1310nm, Single-mode, 10km, 3.3V, -40~85°C, DDMI |
| AXGD-3354-0593           | 522AXGD3354001G | SFP Transceiver, 1250Mbps, 1310nm, Single-mode, 40km, 3.3V, -40~85°C, DDMI |