SW3

IEC-61850 L2/L3 PTP Ethernet Switch for Electrical Substations

The **SW3** is a Gigabit / Fast **Ethernet Switch** specially designed to perform **Switching Functions** (L2 model) and **IPv4 Routing Functions** (L3 model)

The **SW3** Ethernet switch is also designed to meet the standards IEC 61850-3 and IEEE 1613 for the automation of electrical substations.

The **SW3** is a highly flexible device that allows different number and type of ports to be selected.

The **SW3** supports standard IEEE 1588v2 Clock Synchronization (Precision Time Protocol).

The **SW3** can be managed locally and remotely, through a local console, Telnet and SSH server, or through HTTP/HTTPS web server.

The SW3 supports the **SNMPv1**, **SNMPv2c** and **SNMPv3** management protocols, as well as other protocols and services such as **LLDP, LAG, GARP/GMRP, IGMP, DHCP, NTP/SNTP, TACACS+** and **RADIUS**. L3 model also supports the **RIPv1**, **RIPv2**, **OSPFv2** and **BGPv4** routing protocols, and the **VRRP** redundancy protocol.

The chassis has a mechanical structure of **up to four blocks** for the installation of port modules. The port modules are grouped into two different classes, with or without PTP support, that cannot be mixed together. The maximum number port is **32 without PTP or 24 with PTP.**

e-NET **comms**

Main Applications

Level 2 capabilities enable deployment of big scale LANs when the main requirements are: port density, switching performance, and logical complexity.

Level 3 capabilities offer routing functionality between two or more configured VLANs, with each VLAN being made up of a set of local ports (Ethernet and Gigabit Ethernet).

Equipment Interfaces

- ✓ 1 service console (DCE mode).
- ✓ 1 I/O connector.
- ✓ 4 front or rear Gigabit Ethernet SFP bays (copper and fiber).
- ✓ Up to 32 front or rear Fast Ethernet ports type 10/100Base-Tx (RJ-45), 100Base-Fx (MT-RJ, ST, SC and LC) and 100Base-Lx (LC SM) or Up to 24 front or rear IEEE 1588 (Precise Time Protocol) ports.
- ✓ Redundant power supply.
- ✓ Up to 8 electrical PoE ports (4 & 4).

Main Facilities

Full Duplex Wired Speed switching core. Port speed automatic detection. STP (IEEE 802.1d) and RSTP (IEEE 802.1w). Multiple VLANs management (250 simultaneous) (IEEE 802.1Q). QoS (IEEE 802.1p). Broadcast and Multicast traffic limitation. MAC access control lists and 802.1x user authentication. Q-in-Q operation (double-tagged). Link aggregation by LAG function (static). Port mirroring. Links in VLAN Native mode. Interoperability with IEDs that complies with IEC 61850. Traffic filtering (ACL) and firewall (L3 only).

Compatible with standard IEEE 1588v2 Clock Synchronization (Precision Time Protocol) in Transparent Clock (TC) P2P mode.

L3 Routing Protocols (RIPv1, RIPv2, OSPFv2, BGPv4).

Management System

- · HTTP/HTTPS web server.
- · SNMP v1, v2c, v3.
- · Telnet, VT100, SSH.
- · FTP/FTPs server.
- · Command Line Interface (CLI) console.
- · TLS 1.2.
- · RSA Key Management.
- · Authentication and Accounting - TACACS+ and RADIUS clients.

Additional Services

- · LLDP (IEEE 802.1AB).
- · LAG without LACP.
- · GARP/GMRP (IEEE 802.1Q).
- · IGMP.
- · DHCP (L3 only).
- · NTP/SNTP.
- · VRRP (L3 only).
- · DNS (L3 only).

Technical Information

L2 switching

- ✓ Non-blocking hardware architecture (except for some scenarios when equipment configuration includes PTP modules with SFP bays)
- ✓ 11 Gbps switching capacity
- ✓ Maximum of 8192 MAC addresses

Fast Ethernet - Up to 32 ports

The chassis has four physical positions for the installation of any combination of module ports of the following types:
- ✓ 8 ports 10/100Base-Tx (RJ-45)
- ✓ 8 ports 10/100Base-Tx (RJ-45) and PoE on the first four front ports (IEEE 802.3i/802.3u/IEEE 802.3x)
- ✓ 4 or 8 ports 100Base-Fx MM (MT-RJ (IEEE 802.3u/IEEE 802.3x) or LC)
- ✓ 2 or 4 ports 100Base-Fx MM (ST or SC) (IEEE 802.3u/IEEE 802.3x)
- ✓ 4 or 8 ports 100Base-Lx SM (LC SM) (IEEE 802.3u/IEEE 802.3x)

IEEE 1588 (PTP) - Up to 24 ports

The chassis has four physical positions for the installation of any combination of module ports of the following types:
- ✓ 6 ports 10/100Base-Tx (RJ-45) (IEEE 802.3i/802.3u/IEEE 802.3x)
- ✓ 4 ports 10/100Base-Tx (RJ-45) & 2 Gigabit Ethernet SFP bays (IEEE 802.3z/802.3ab/802.3u/802.3x)
- ✓ 4 ports 10/100Base-Tx (RJ-45) & 2 ports 100Base-Fx MM (MT-RJ (IEEE 802.3u/IEEE 802.3x) or LC or ST or SC)
- ✓ 4 ports 10/100Base-Tx (RJ-45) & 2 ports 100Base-Fx MM (LC)

Service Port

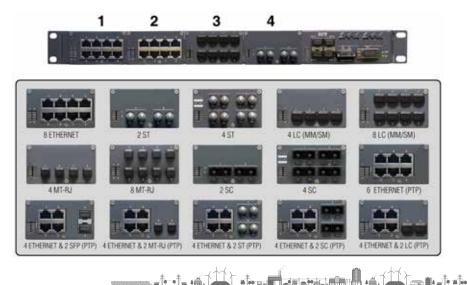- ✓ DB9 female connector in DCE mode. Speed of 115200 bit/s

Mounting

Stand-alone (19"/1 s.u. chassis)
Dimensions: Height: 44 mm; Width: 440 mm; Depth: 287 mm; Weight: 3.4 kg

Power Supply

36-72Vdc (48Vdc nominal) or multirange (80-360Vdc, 80-260Vac)
Maximum consumption at 48 Vdc: 40 W
Redundant power-supply option

Temperature Range	From -40° C to +85°C
Material	Grey (RAL 7024) zinc-plating iron
EMI Immunity & Environment Compliance	
	IEC 61850-3, IEEE 1613, IEC 61000-6-5

8 ETHERNET · 2 ST · 4 ST · 4 LC (MM/SM) · 8 LC (MM/SM)
4 MT-RJ · 8 MT-RJ · 2 SC · 4 SC · 6 ETHERNET (PTP)
4 ETHERNET & 2 SFP (PTP) · 4 ETHERNET & 2 MT-RJ (PTP) · 4 ETHERNET & 2 ST (PTP) · 4 ETHERNET & 2 SC (PTP) · 4 ETHERNET & 2 LC (PTP)

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