PT-510 Series

IEC 61850-3 10-port DIN-Rail managed Ethernet switches

The PowerTrans PT-510 is designed to meet the demands of power substation automation systems (IEC 61850-3, IEEE 1613). The PT-510’s optical fiber Fast Ethernet backbone, redundant ring, and dual isolated redundant power supplies increase the reliability of your communications and save on cabling/wiring costs. In addition, the DIN-Rail and wallmount designs of the PT-510 make network planning easy, and allow greater flexibility by letting you install up to 10 Fast Ethernet ports for power distribution applications.

Introduction

IEC 61850-3 and IEEE 1613 (power substations) compliant
Turbo Ring and Turbo Chain (recovery time < 20 ms @ 250 switches), RSTP/STP, and MSTP for network redundancy
Easy network management by web browser, CLI, Telnet/serial console, Windows utility, and ABC-01
Isolated redundancy for universal 24/48 VDC power inputs
Wide 110/220 VDC/VAC power supply range support
Modbus/TCP, LLDP, SNMP Inform, QoS, IGMP snooping, VLAN, IEEE 802.1X, HTTPS, SNMPv3, and SSH supported
-40 to 85°C operating temperature range

General Features and Benefits

Command Line Interface (CLI) for quickly configuring major managed functions
IPv6 Ready logo awarded (IPv6 Logo Committee certified)
Software-based IEE 1588 PTP V2 (Precision Time Protocol) for precise time synchronization of networks
VLAN Unaware: Supports priority-tagged frames to be received by specific IEDs
DHCP Option 82 for IP address assignment with different policies
EtherNet/IP and Modbus/TCP industrial Ethernet protocols supported
Turbo Ring and Turbo Chain (recovery time < 20 ms @ 250 switches), RSTP/STP, and MSTP for network redundancy
IGMP snooping and GMRP for filtering multicast traffic from industrial Ethernet protocols
IEEE 802.3ad, LACP for optimum bandwidth utilization
Bandwidth management prevents unpredictable network status
Multi-port mirroring for online debugging
Automatic warning by exception through email, relay output
RMON for efficient network monitoring and proactive capability
Automatic recovery of connected device’s IP addresses
Line-swap fast recovery
Configurable by Web browser, Telnet/Serial console, CLI, Windows utility, and ABC-01 automatic backup configurator

Cyber-security Features

User passwords with multiple levels of security protect against unauthorized configuration
SSH/HTTPS is used to encrypt passwords and data
Lock switch ports with 802.1x port-based network access control so that only authorized clients can access the port
Disable one or more ports to block network traffic
802.1Q VLAN allows you to logically partition traffic transmitted between selected switch ports
Secure switch ports so that only specific devices and/or MAC addresses can access the port
Radius/TACACS+ allows you to manage passwords from a central location
SNMPv3 provides encrypted authentication and access security
**Specifications**

**Technology**
- Standards:
  - IEEE 802.3 for 10BaseT
  - IEEE 802.3u for 100BaseT(X) and 100Base FX
  - IEEE 802.3x for Flow Control
  - IEEE 802.1D for Spanning Tree Protocol
  - IEEE 802.1w for Rapid Spanning Tree Protocol
  - IEEE 802.1D-2004 for Spanning Tree Protocol
  - IEEE 802.1p for Class of Service
  - IEEE 802.1X for Authentication
  - IEEE 802.3ad for Port Trunk with LACP
  - IEEE 802.1s for Multiple Spanning Tree Protocol
- Protocols: IGMPv1/v2, GMRP, GVRP, SNMPv1/v2c/v3, DHCP Server/Client, DHCP Option 60/67/82, BootP, TFTP, SMTP, RARP, RMON, HTTP, HTTPS, Telnet, SSH, syslog, EtherNet/IP, Modbus/TCP, SNMP Inform, LLDP, IEEE-1588 PTP V2, IPv6, NTP Server/Client
- MIB: MIB-II, Ethernet-like MIB, P-BRIDGE MIB, Q-BRIDGE MIB, Bridge
- flow control: IEEE 802.3x flow control, back pressure flow control

**Switch Properties**
- Priority Queues: 4
- Max. Number of Available VLANs: 64
- VLAN ID Range: VID 1 to 4094
- IGMP Groups: 256
- MAC Table Size: 8 K
- Packet Buffer Size: 1 Mbit

**Interface**
- RJ45 Ports: 10/100BaseT(X) auto negotiation speed, F/H duplex mode, and auto MDI/MDI-X connection
- Fiber Ports: 100BaseFX ports (SC/ST/LC/MTRJ connector)
- Console Port: RS-232 (RJ45)
- LED Indicators: PWR1, PWR2 (DC models only), FAULT, MSTR/HEAD, CPLR/TAI

**Dimensions**

<table>
<thead>
<tr>
<th>PT-510</th>
<th>80 [3.15]</th>
<th>110 [4.33]</th>
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</table>

**Power Requirements**
- Input Voltage: 24 VDC (18 to 36 V)
- Input Current: Max. 0.425 A @ 24 VDC

**Alarm Contact**: 1 relay output with current carrying capacity of 1 A @ 24 VDC

**Overload Current Protection**: Present

**Connection**: 5-pin terminal blocks

**Physical Characteristics**
- Housing: IP40 protection
- Dimensions: 80 x 160 x 110 mm (3.15 x 6.30 x 4.33 in)
- Weight: 1210 g

**Environmental Limits**
- Operating Temperature: -40 to 85°C (-40 to 185°F), cold start requires min. of 100 VAC at -40°C
- Storage Temperature: -40 to 85°C (-40 to 185°F)
- Ambient Relative Humidity: 5 to 95% (non-condensing)

**Standards and Certifications**
- Safety: UL 508 (Pending)
- EMI: FCC Part 15 Subpart B Class A, EN 55022 Class A
- Power Automation: IEC 61850-3, IEEE 1613

**Warranty**
- Warranty Period: 5 years
- Details: See www.moxa.com/warranty
### Ordering Information

<table>
<thead>
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<th>DIN-Rail, Front Cabling, Front Display</th>
<th>Available Models</th>
<th>Port Interface</th>
<th>Power Supply</th>
<th>10/100 BaseT(X)</th>
<th>1000BaseFX</th>
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<td>Multi-mode, SC Connector</td>
<td>Multi-mode, ST Connector</td>
<td>Multi-mode, LC Connector</td>
<td>Multi-mode, MTRJ Connector</td>
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<td>24 VDC (18 to 36 V)</td>
<td>48 VDC (36 to 72 V)</td>
<td>88 to 300 VDC and 85 to 264 VAC</td>
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Note: Additional switch configurations with 3 or 4 fiber ports are available upon special request.

### Optional Accessories
(\(^\text{can be purchased separately}\))

- **Mxview**: Moxa industrial network management software with 50, 100, 250, 500, 1000, or 2000 nodes
- **EDS-SNMP OPC Server Pro**: OPC server software that works with all SNMP devices
- **ABC-01**: Configuration backup and restoration tool for managed Ethernet switches, 0 to 60°C operating temperature

### Package Checklist
- PT-510 switch
- RJ45-to-DB9 console port cable
- DIN-Rail kit or wall mount ears (optional)
- 1 grounding cable
- Protective caps for unused ports
- Documentation and software CD
- Hardware installation guide
- Warranty card