

# PT-510 Series

## IEC 61850-3 10-port DIN-rail managed Ethernet switches



- > 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 universal 24VDC or 48VDC redundant power inputs
- > Wide 110/220 VDC/VAC power supply range
- > Modbus/TCP, LLDP, SNMP Inform, QoS, IGMP snooping, VLAN, IEEE 802.1X, HTTPS, SNMPv3, and SSH supported
- > -40 to 85°C operating temperature range



### Introduction

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, redundant power inputs (24 VDC or 48 VDC), and isolated power inputs (24 VDC, 48 VDC, or 110/220 VDC/VAC) increase the reliability

of your communications and save on cabling/wiring costs. In addition, the DIN-rail and wallmount design of the PT-510 makes network planning easy, and allows greater flexibility by letting you install up to 10 Fast Ethernet ports for power distribution applications.

### General Features and Benefits

- Command Line Interface (CLI) for quickly configuring major managed functions
- IPv6 Ready logo awarded (IPv6 Logo Committee certified)
- Software-based IEEE 1588v2 PTP (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

### Cybersecurity 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 ports
- 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 100BaseFX
- 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 802.1Q for VLAN Tagging

- 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 66/67/82, BootP, TFTP, SNTP, 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

MIB, RSTP MIB, RMON MIB Group 1, 2, 3, 9

**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/TAILO

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

**Power Requirements**

**Input Voltage:**

- 24 VDC (18 to 36 V)
- 48 VDC (36 to 72 V)
- 110/220 VDC/VAC (88 to 300 VDC, 85 to 264 VAC)

**Input Current:** (all ports are equipped with fiber)

- Max. 0.425 A @ 24 VDC
- Max. 0.19 A @ 48 VDC
- Max. 0.111/0.056 A @ 110/220 VDC
- Max. 0.254/0.16 A @ 110/220 VAC

**Overload Current Protection:** Present

**Connection:** 5-pin terminal blocks

**Reverse Polarity Protection:** Present

**Physical Characteristics**

**Housing:** IP40 protection

**Dimensions:** 80 x 160 x 110 mm (3.15 x 6.30 x 4.33 in)

**Weight:** 1210 g

**Installation:** DIN-rail mounting, wall mounting (with optional kit)

**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

*Note: Please check Moxa's website for the most up-to-date certification status.*

**Warranty**

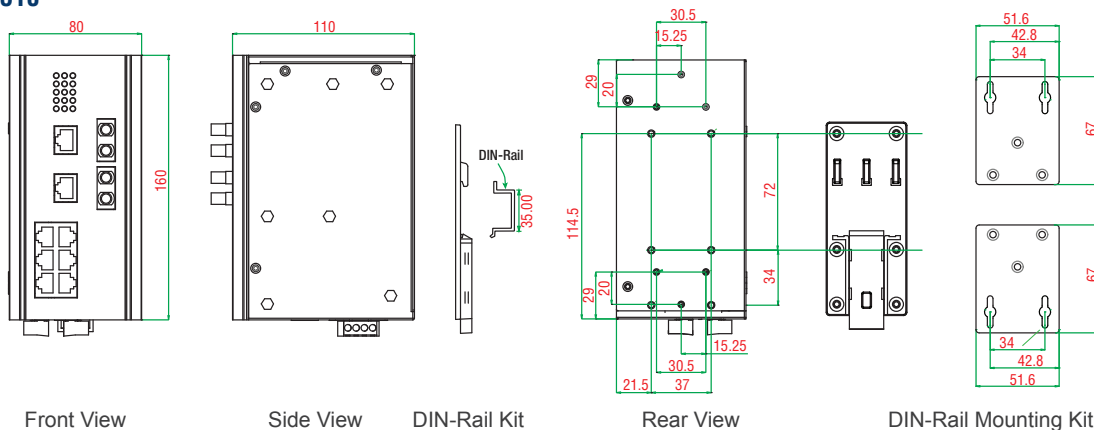
**Warranty Period:** 5 years

**Details:** See [www.moxa.com/warranty](http://www.moxa.com/warranty)

**Dimensions**

**PT-510**

Unit: mm (inch)



## Ordering Information

DIN-Rail, Front Cabling, Front Display	Available Models			10/100 BaseT(X)	Port Interface					
	Power Supply				100BaseFX					
	24 VDC (18 to 36 V)	48 VDC (36 to 72 V)	HV: 88 to 300 VDC and 85 to 264 VAC		Multi-mode, SC Connector	Multi-mode, ST Connector	Multi-mode, LC Connector	Multi-mode, MTRJ Connector	Single- mode, SC Connector	Single- mode, LC Connector
PT-510-4M-ST-24	1	–	–	6	–	4	–	–	–	–
PT-510-4M-ST-48	–	1	–	6	–	4	–	–	–	–
PT-510-4M-ST-HV	–	–	1	6	–	4	–	–	–	–
PT-510-MM-SC-24	1	–	–	8	2	–	–	–	–	–
PT-510-MM-SC-48	–	1	–	8	2	–	–	–	–	–
PT-510-MM-SC-HV	–	–	1	8	2	–	–	–	–	–
PT-510-MM-ST-24	1	–	–	8	–	2	–	–	–	–
PT-510-MM-ST-48	–	1	–	8	–	2	–	–	–	–
PT-510-MM-ST-HV	–	–	1	8	–	2	–	–	–	–
PT-510-MM-LC-24	1	–	–	8	–	–	2	–	–	–
PT-510-MM-LC-48	–	1	–	8	–	–	2	–	–	–
PT-510-MM-LC-HV	–	–	1	8	–	–	2	–	–	–
PT-510-2MTRJ-24	1	–	–	8	–	–	–	2	–	–
PT-510-2MTRJ-48	–	1	–	8	–	–	–	2	–	–
PT-510-2MTRJ-HV	–	–	1	8	–	–	–	2	–	–
PT-510-SS-SC-24	1	–	–	8	–	–	–	–	2	–
PT-510-SS-SC-48	–	1	–	8	–	–	–	–	2	–
PT-510-SS-SC-HV	–	–	1	8	–	–	–	–	2	–
PT-510-3S-SC-HV	–	–	1	7	–	–	–	–	3	–
PT-510-3S-SC-24	1	–	–	7	–	–	–	–	3	–
PT-510-3S-SC-48	–	1	–	7	–	–	–	–	3	–
PT-510-SS-LC-24	1	–	–	8	–	–	–	–	–	2
PT-510-SS-LC-48	–	1	–	8	–	–	–	–	–	2
PT-510-SS-LC-HV	–	–	1	8	–	–	–	–	–	2

**Note:**

Additional switch configurations with 3 or 4 fiber ports are available upon special request.  
24 VDC, 48 VDC, and HV models support isolated power; only 24 VDC and 48 VDC models support redundant power inputs.

### Optional Accessories (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