# LANTRONIX®

## SM24TBT2DPB

Managed Gigabit Ethernet PoE++ Switch

(24) 10/100/1000Base-T Ports + (2) 100/1000Base-X SFP/RJ-45 Combo Ports

# Install Guide

## Intellectual Property

## Warranty

For details on the Lantronix warranty policy, go to http://www.lantronix.com/support/warranty.

## Contacts

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**Sales Offices**

For a current list of our domestic and international sales offices, go to www.lantronix.com/about/contact.

## Disclaimer

## Revision History

| Date | Rev. | Comments |
|------|------|----------|
| 4/25/22 | A | Initial Lantronix SM24TBT2DPB release at FW VB6.64.0045. |
| 6/16/22 | B | Correct model number references on page 19. |
| 12/1/22 | C | Add -DE SKUs, update warranty, and change address. Add ConsoleFlow and LPM support. Add application example and LEVEL support services. Note Power Module Monitoring change. |
| 12/16/22 | D | Update to include EN62368 approval. |

# Contents

# 1.  Introduction

## Product Description

The switch is a high performance Layer 2 managed switch with 52 Gbps switching capacity. It provides (24) 10/100/1000Mbps copper ports with IEEE 802.3bt PoE++ capability and (2) additional 100/1000Mbps dual speed SFP/RJ-45 combo ports. The SM24TBT2DPB complies with the latest IEEE 802.3bt PoE++ standard and supplies up to 90 Watts per port. It can provide full PoE++ output on all 24 ports when equipped with the dual hot-swappable PS-ACDC-1200 power supplies. The SM24TBT2DPB can be powered by low-line and high-line AC or DC power and Digital Electricity™ (DE), making it ideal for use in a wide variety of building applications.

## About This Manual

This manual describes the switch and how to install, configure, and troubleshoot the switch, including how to:

- Install, connect, and power the switch
- Check switch status by reading the LED behavior
- Reset the switch or to restore the switch to factory defaults
- Use a Web browser or the CLI to initially configure the switch
- Troubleshoot the switch

## Ordering Information

| Model # | Description |
|---|---|
| SM24TBT2DPB-**DE** | Switch with one power supply; **no Saf-D adapter cable or power cord - for Digital Electricity applications only** |
| SM24TBT2DPB-xx | Switch with one power supply; includes one Saf-D adapter cable, and country-specific power cord |
| SM24TBT2DPB-2XPS-**DE** | Switch with two power supplies; **no Saf-D adapter cable or power cord - for Digital Electricity applications only** |
| SM24TBT2DPB-2XPS-xx | Switch with two power supplies; includes two Saf-D adapter cables, and country-specific power cords |
| **Optional Accessories** (sold separately) | |
| PS-ACDC-1200-**DE** | Additional power supply if customer initially orders switch with one power supply and wants to add second power supply; **no Saf-D adapter cable or power cord - for Digital Electricity applications only** (optional – order separately). |
| PS-ACDC-1200-xx | Additional power supply if customer initially orders switch with one power supply and wants to add the second power supply; includes one Saf-D adapter cable, and country-specific power cord(s) (optional – order separately). |
| SFP+ Modules | See our SFP product page (optional – order separately). |
| ConsoleFlow | Centralized Management Software for PoE Switches, Remote Environment Management (REM) and IoT Gateway products. Sold separately. Select an annual subscription model. |
| LPM (Lantronix Provisioning Manager) | Lantronix Provisioning Manager (LPM) allows easy administration of Lantronix devices. LPM lets you quickly update firmware, update configuration, and provision one or more devices simultaneously. See the LPM product page. |

**Note**: The **-DE** models have no cords included and the parts are intended for Digital Electricity applications only. Any traditional AC/DC powered applications should continue to order the -NA (or other respective country code) to be sure the correct Saf-D cable and the special power cords3 are included. **Note**: do not order either the switch or power supply without a suffix. **Note**: Digital Electricity is a trademark of VoltServer. For more information about Digital Electricity, visit https://www.voltserver.com/.

## Country Codes

-xx = Country Code -NA = North America, -LA = Latin America, -EU = Europe, -UK = United Kingdom, -SA = South Africa, -JP = Japan, -OZ = Australia, -BR = Brazil.

## Related Documentation

- SM24TBT2DPB Quick Start Guide, 33844
- SM24TBT2DPA and DPB Web User Guide, 33738
- SM24TBT2DPA and DPB CLI Reference, 33739
- Release Notes (version specific)

## Features

- Hot-swappable dual power supply modules
- IPv4/IPv6 dual protocol stack
- Jumbo Frame up to 9K bytes
- Authentication – RADIUS, TACACS+
- Security – SSH v1/SSH v2/SSL
- Port based or tagged (IEEE 802.1Q) VLAN, MAC based, Management VLAN and Private VLAN Edge
- DHCP Relay, DHCP Server
- L2/L3/L4 ACLs, MAC ACL, IP standard/extended ACL
- LLDP (Link Layer Discovery Protocol)
- IEEE 802.3az Energy Efficiency
- IP Source Guard, Port Security

## PoE Features

- Compliant with IEEE 802.3bt PoE++
- Compliant with IEEE 802.3at PoE+
- Compliant with IEEE 802.3af PoE
- IEEE 802.1AB LLDP-MED Configuration
- PoE Configuration and PoE Scheduling
- Auto Power Reset
- DHCP per Port
- Always on PoE and Ultra-Fast PoE

## Software Features

- Management: Web Management, SNMP V1/V2c/V3, Telnet, CLI, REST API
- Port Trunk: Supports IEEE 802.3ad port trunk with LACP and static trunk
- IGMP: Supports IGMP Snooping V1/V2/V3, GVRP, IGMP Proxy, and IGMP Querier
- Quality of Service: Supports 8 hardware queues. Strict priority and WRR
- Spanning Tree: Supports IEEE 802.1s MSTP, IEEE 802.1w RSTP and IEEE 802.1D STP
- Rapid Ring
- VLAN: Port-based VLAN, IEEE 802.1Q tag-based, up to 4k VLAN entries, QinQ, MAC-based VLAN, Private VLAN, Voice VLANs and Management VLAN
- Firmware Update, configuration backup/restore via TFTP and HTTP
- ConsoleFlow and LPM options

## Device Management System (DMS) Features

- Graphical Monitoring – Topology view, Floor view, Map view
- Traffic Monitoring – Shows a chart of network performance the devices – all the ports or a specific port
- Troubleshooting – Network diagnostic, protection mechanism, performance and link management
- Firmware Upgrades, Find Switch, Notifications, and Monitoring/Polling via DMS

# Specifications

| | |
|---|---|
| Standards | IEEE 802.3, IEEE 802.3u, IEEE 802.3z, IEEE 802.3ae, IEEE 802.3x, IEEE 802.3ad, IEEE 802.1D, IEEE 802.1w, IEEE 802.1s, IEEE 802.1Q, IEEE 802.1p, IEEE 802.1ad, IEEE 802.1AB, IEEE 802.3af, IEEE 802.3at, IEEE 802.3bt, IEEE 802.3az |
| Connectors | (1) RJ console port; (24) 10/100/1000 RJ-45 ports; (2) 100/1000 SFP/RJ-45 combo ports |
| Protocols | CSMA/CD |
| Technology | Store-and-Forward switching architecture |
| MAC Address | 8K MAC address table |
| Backplane | 52 Gbps |
| Dimensions | Width: 17.4" [442 mm] x Depth: 11.8" [300 mm] x Height: 1.73" [44 mm] |
| Power Input | Dual Hot-Swappable Power Supplies; Power Redundancy, Failover: PS-ACDC-1200<br>AC low-line: 100 - 120VAC<br>AC high line: 200 - 277VAC<br>HVDC low-line : 194 - 254VDC<br>HVDC high-line: 306 - 334VDC |
| Power Consumption | Maximum Power Consumption without PoE:<br>79 Watts with dual AC power modules<br>52 Watts with single AC power module |
| Power over Ethernet | Max 90 Watts output per port:<br>AC low-line: 900W (single PS), 1,800W (dual PS)<br>AC high-line: 1,080W (single PS), 2,160W (dual PS)<br>HVDC low-line: 900W (single PS), 1,800W (dual PS)<br>HVDC high-line: 1,080W (single PS), 2,160W (dual PS) |
| Environment | Operating Temp: 0°C to +40°C (32 to 104°F).<br>Storage Temp: -20 to +40°C (-4 to +158°F)<br>Humidity: 10% to 90% (non-condensing) |
| Weight | SM24TBT2DPB (single power supply) = 11.3 lbs [5.12 kg]<br>SM24TBT2DPB-2XPS (dual power supplies) = 13.3 lbs [6.03 kg] |
| Certifications | FCC Class A, CE, UL 62368-1, CSA C22.2 No. 62368-1:19 |
| Warranty | 5 Years (switch and power supply) |

## MTBF

**SM24TBT2DPB**: Relex Software Standard Reliability Prediction Report; GB, GC – Ground Benign, Controlled:

| Configuration | Temperature | MTBF |
|---|---|---|
| SM24TBT2DPB with 2 PSU | 25.00°C | 168,959 Hrs. |
| SM24TBT2DPB with 2 PSU | 40.00°C | 98,720 Hrs. |
| SM24TBT2DPB | 25.00°C | 204,204 Hrs. |
| SM24TBT2DPB | 40.00°C | 116,208 Hrs. |

## Software Feature Descriptions

| **Layer 2 Switching** | |
|---|---|
| Spanning Tree Protocol (STP) | • Standard Spanning Tree 802.1d<br>• Rapid Spanning Tree (RSTP) 802.1w<br>• Multiple Spanning Tree (MSTP) 802.1s |
| Trunking | Link Aggregation Control Protocol (LACP) IEEE 802.3ad<br>• Up to 13 groups<br>• Up to 16 ports per group |
| VLAN | Supports up to 4K VLANs simultaneously (out of 4096 VLAN IDs)<br>• Port-based VLAN<br>• 802.1Q tag-based VLAN<br>• MAC-based VLAN<br>• Management VLAN<br>• Private VLAN Edge (PVE)<br>• Q-in-Q (double tag) VLAN<br>• Voice VLAN<br>• GARP VLAN Registration Protocol (GVRP) |
| DHCP Relay | • Relay of DHCP traffic to DHCP server in different VLAN.<br>• Works with DHCP Option 82 |
| IGMP v1/v2/v3 Snooping | IGMP limits bandwidth-intensive multicast traffic to only the requesters. Supports 1024 multicast groups. |
| IGMP Querier | IGMP querier is used to support a Layer 2 multicast domain of snooping switches in the absence of a multicast router. |
| IGMP Proxy | IGMP snooping with proxy reporting or report suppression actively filters IGMP packets to reduce load on the multicast router. |
| MLD v1/v2 Snooping | Delivers IPv6 multicast packets only to the required receivers. |
| **Device Management System (DMS)** | |
| Graphical Monitoring | • Topology View provides end-to-end visibility of attached PDs with remote access.<br>• Floor View lets designers import existing JPEGs or PNGs of the floor and site drawings into DMS<br>• Google Maps™ View lets you drag and drop PDs and be visible by State, City, and Street Address |
| Find my Switch | Locate your switch quickly and manage directly. |

| Traffic Monitoring | Displays a visual chart of network traffic of all devices to let you monitor every port at any time from a switch |
|---|---|
| Troubleshooting | Network diagnostic, protection mechanism, performance and link management |
| **Layer 3 Switching** | |
| IPv4 Static Routing | IPv4 Unicast Static routing |
| IPv6 Static Routing | IPv6 Unicast Static routing |
| **Security** | |
| Secure Shell (SSH) | SSH secures Telnet traffic in or out of the switch; SSH v1 and v2 are supported |
| Secure Sockets Layer (SSL) | SSL encrypts the HTTP traffic, allowing advanced secure access to the browser-based management GUI in the switch. |
| IEEE 802.1X | <ul><li>IEEE802.1X: RADIUS authentication, authorization and accounting, MD5 hash, guest VLAN, single/multiple host mode and single/multiple sessions</li><li>Supports IGMP-RADIUS based 802.1X</li><li>Dynamic VLAN assignment</li></ul> |
| Layer 2 Isolation Private VLAN Edge | PVE (also known as protected ports) provides L2 isolation between clients in the same VLAN. Supports multiple uplinks |
| Port Security | Locks MAC addresses to ports and limits the number of learned MAC address. |
| IP Source Guard | Prevents illegal IP address from accessing a specific switch port. |
| RADIUS/ TACACS+ | Supports RADIUS and TACACS+ authentication; the switch acts as a client. |
| Storm Control | Prevents traffic on a LAN from being disrupted by a broadcast, multicast, or unicast storm on a port. |
| DHCP Snooping | Acts as a firewall between untrusted hosts and trusted DHCP servers |
| ACLs | Supports up to 256 entries. Drop or rate limitation based on:<ul><li>Source and destination MAC, VLAN ID or IP address, protocol, port</li><li>Differentiated Services Code Point (DSCP) / IP precedence</li><li>TCP/ UDP source and destination ports</li><li>802.1p priority</li><li>Ethernet type</li><li>Internet Control Message Protocol (ICMP) packets</li><li>TCP flag</li></ul> |
| **Quality of Service (QoS)** | |
| Hardware Queue | Supports 8 hardware queues |
| Scheduling | <ul><li>Strict priority and weighted round-robin (WRR)</li><li>Queue assignment based on DSCP and class of service</li></ul> |
| Classification | <ul><li>Port based</li><li>802.1p VLAN priority based</li><li>IPv4/IPv6 precedence / DSCP based</li><li>Differentiated Services (DiffServ)</li><li>Classification and re-marking ACLs</li></ul> |
| Rate Limiting | <ul><li>Ingress policer</li><li>Egress shaping and rate control</li><li>Per port</li></ul> |

| Management | |
|---|---|
| DHCP Server | Supports DHCP server to assign IP to DHCP clients |
| DHCP per Port | You can assign an IP address based on the switch port the device is connected to. This will speed up installations of IP cameras; cameras can be configured after they are on the network. The per-port assignment allows you to know which IP was assigned to which camera. |
| Link-Local Address binding interface | Configure Link-Local IP address to a different VLAN interface. The first IP interface entry (169.254.xx.xx) is for the default value (VLAN 1). A link-local address is a unicast address having link-only scope that can be used to reach neighbors. All interfaces on routers must have a link-local address. Also, ADDRCONF requires that interfaces on hosts have a link-local address. |
| Event Notifications | • Event Notification via Syslog and/or SNMP Traps<br>• Event Notification with 8 Severity levels |
| Remote Monitoring (RMON) | Embedded RMON agent supports RMON groups 1,2,3,9 (history, statistics, alarms, and events) for enhanced traffic management, monitoring and analysis |
| Port Mirroring | Traffic on a port can be mirrored to another port for analysis with a network analyzer or RMON probe. Up to $n$-1 (where $n$ is the max number of Switch Ports) ports can be mirrored to single destination port. A single session is supported. |
| UpnP | Universal Plug and Play (UPnP) is a network protocol that allows compliant devices to automatically set port forwarding rules for themselves. |
| s-Flow | The industry standard for monitoring high speed switched networks. It gives complete visibility into the use of networks enabling performance optimization, accounting/billing for usage, and defense against security threats |
| IEEE 802.1ab (LLDP) | • Used by network devices for advertising their identities, capabilities, and neighbors on an IEEE 802ab local area network<br>• Support LLDP-MED extensions |
| Web GUI Interface | Built-in switch configuration utility for browser-based device configuration |
| CLI | For configuring / managing the switch in Command Line Interface modes |
| Dual Image | Independent primary and secondary images for backup while upgrading |
| SNMP | SNMP version1, 2c and 3 with support for traps, and SNMP version 3 user-based security model (USM) |
| Firmware Upgrade | • Web browser upgrade (HTTP/ HTTPs) and TFTP<br>• Upgrade via the console port |
| NTP | Network Time Protocol (NTP) is a networking protocol for clock synchronization between computer systems over packet-switched |
| Restful API | Allows switch to be monitored and managed through Cloud Management Systems or integrated with Network Management Systems and Video Management Systems. |
| Other Management | • HTTP/HTTPS; SSH<br>• DHCP Client/ DHCPv6 Client<br>• Cable Diagnostics<br>• Ping<br>• Syslog<br>• Telnet Client<br>• IPv6 Management |

| Power over Ethernet (PoE) | |
|---|---|
| Port Configuration | Supports per-port PoE configuration function |
| PoE Scheduling | Supports per port PoE scheduling to turn on/off the PoE devices (PDs); |
| Auto Power Reset | Checks the link status of PDs and reboots PDs if there are no responses. Automatically monitors and reboots PDs when no response to ICMP is received. |
| Power Delay | The switch provides power to the PDs based on configurable delay time when PoE switch boots up, to protect switch from misuse of the PDs |
| Always on PoE | Lets you restart device, upload software, or swap active and alternate (backup) firmware images while retaining PoE power to PDs. Note: It takes 75 – 80 seconds to have PoE++ power on the ports to power PDs again if the switch makes a cold restart. "Always on PoE" has no effect on this time. Allows the switch to retain PoE output to attached PDs during a warm reboot. |
| Ultra-fast PoE | Improves PoE startup time. Ultra-fast PoE enables PoE output to attached PDs within 5 seconds after a cold start. |
| IEEE 802.3bt/at/af compliant | Compliance with latest PoE standard allows the switch to provide up to 90W per port. |
| Supports full 90 Watts per port | on all 24 ports simultaneously (with secondary power supply installed). This enables higher power PoE applications such as LED lighting or digital signage on all ports |
| Hot-swappable dual power modules | Allows for scaling of PoE power depending on needs or provides redundancy to eliminate system downtime. |
| Powering options | Accommodates low-line and high-line AC or DC power and Digital Electricity™, making it ideal for use in a wide variety of building applications. Note: Digital Electricity is a trademark of VoltServer. For more information about Digital Electricity, visit https://www.voltserver.com/. |
| Saf-D power connector | Provides increased safety features for connecting higher voltage DC or hybrid AC/DC systems. |

| ConsoleFlow and LPM Options (order separately) | |
|---|---|
| ConsoleFlow | • Auto-discovery of devices connected to the switch interfaces<br>• Perform on-demand backup and restore of device configuration<br>• Perform secure remote device firmware upgrades<br>• Lantronix-hosted public cloud offering |
| LPM | Lantronix Provisioning Manager allows easy administration of Lantronix devices. LPM lets you quickly update firmware, update configuration, and provision one or more devices simultaneously. |

| LEVEL Services (order separately) | |
|---|---|
| CF-NWS-CLOUDSAAS-xYR | ConsoleFlow Cloud Subscription x-Years (1,3 or 5 years) |
| LEVEL-x-yYEAR | Technical Support Services, Level 1, 2 or 3 and 1, 3 or 5 year subscription |

# Applications

The SM24TBT2DPB-xx can be powered by low-line and high-line AC or DC power or digital electricity (DE), making it ideal for use in a wide variety of building applications, including:

- LED Lighting, supplying power and connectivity to lighting and other building IoT devices.
- IP Surveillance, supplying power and data to PTZ IP cameras, thermal cameras.
- Supplying power and data to thin clients, POS system, digital signage.



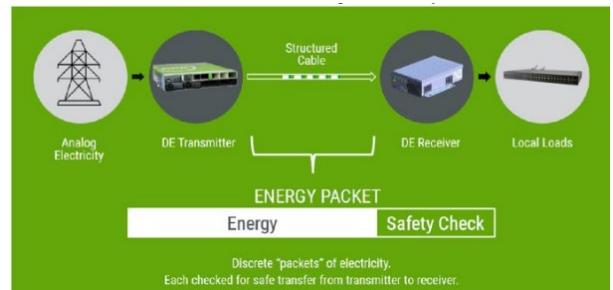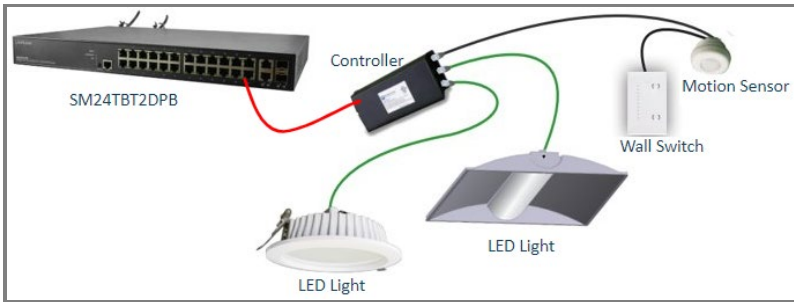PoE Lighting    Smart Building    Security & Surveillance    POS Systems    Digitial Signage    Thin Clients
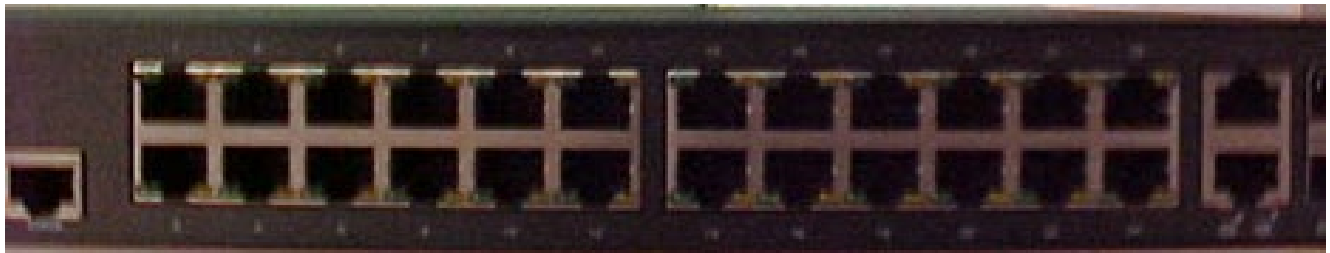
## Front Panel

The SM24TBT2DPB front panel LEDs, ports and buttons are shown and described below.

Link/Act/Speed Mode LED · System LED · Console Port · 10/100/1000 RJ45 Ports · 100/1000 RJ45/SFP Combo Ports



PoE Mode LED · Mode/Reset Button · Port Status LEDs
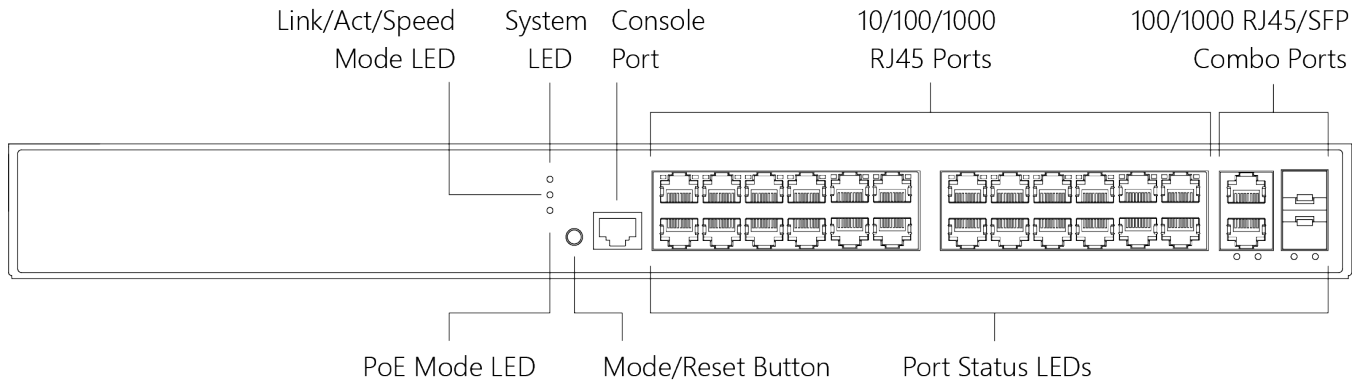
## LED Descriptions

The front panel LEDs provide switch status checking and monitoring. The four types of LEDs are described below:

**SYS (System) LED**: indicates if the switch is powered up correctly or indicates if there is a system alarm triggered for troubleshooting.

| LED | Color | State | Description |
|---|---|---|---|
| **Sys**tem | Green | On | The switch is powered ON correctly. |
| | | Off | The switch is not receiving power. |
| | Red | On | An abnormal state, such as exceeding operating temperature range, has been detected in the switch. |

**Mode LEDs**: indicate the mode of all RJ45/SFP ports on the switch. You can press the **Mode/Reset** button sequentially to switch between the two different modes (Link/Activity/Speed mode and PoE mode).

| LED | Color | State | Description |
|---|---|---|---|
| Link/Act/Speed | Green | On | The Port Status LEDs display link status, network activity and speed of each port. |
| PoE | Green | On | The RJ45 Port Status LEDs display PoE powering status of each port. |

**Power Supply LEDs**: The LEDs on the Power Supply indicate power status for each Power Supply.

| LED | Color | State | Description |
|---|---|---|---|
| **AC** | Green<br>Red<br>-- | On<br>On<br>Off | AC Input is ready.<br>AC Input has failed.<br>AC Input is off. |
| **DC** | Green<br>Red<br>-- | On<br>On<br>Off | DC output is ready.<br>DC output has failed.<br>DC output is off. |

**Port Status LEDs**: indicate the current status of each RJ45 and SFP port. You can check these LEDs to understand the port status in different modes, after changing the mode by pressing the **Mode/Reset** button.

Press the **Mode/Reset** button for less than 2 seconds to change LED modes (Link/Act/Speed Mode or PoE Mode); you can then check the port status by reading the LED behaviors per the table below.

**Table 3: Port Status LEDs**

| When Link/Act/Speed Mode LED Lit | | | |
|---|---|---|---|
| **LED** | **Color** | **State** | **Description** |
| RJ45 Ports | Green | On | The port is enabled and established a link to connected device, and the connection speed is 1000Mbps. |
| | Green | Blinking | The port is transmitting/receiving packets, and the connection speed is 1000Mbps. |
| | Amber | On | The port is enabled and established a link to connected device, and the connection speed is 10/100Mbps. |
| | Amber | Blinking | The port is transmitting/receiving packets, and the connection speed is 10/100Mbps. |
| | -- | Off | The port has no active network cable connected, or it has not established a link to connected device. Otherwise, the port may have been disabled through the switch user interface. |
| SFP Ports | Green | On | The port is enabled and has established a link to connected device, and the connection speed is 1000Mbps. |
| | Green | Blinking | The port is transmitting/receiving packets, and the connection speed is 1000Mbps. |
| | Amber | On | The port is enabled and has established a link to connected device, and the connection speed is 100Mbps. |
| | Amber | Blinking | The port is transmitting/receiving packets, and the connection speed is 100Mbps. |
| | -- | Off | The port has no active network cable connected, or it has not established a link to connected device. Otherwise, the port may have been disabled via the switch UI. |
| When PoE Mode LED Lit | | | |
| **LED** | **Color** | **State** | **Description** |
| RJ45 Ports | Green | On | The port is enabled and supplying power to connected device. |
| | Amber | On | An abnormal state, such as overload status, has been detected in the switch. |
| | -- | Off | The port has no active network cable connected, or it is not connected to a PoE PD device. Otherwise, the port may have been disabled via the switch UI. |

## Mode/Reset Button

Pressing the front panel **Mode/Reset** button for a period of time lets you perform these tasks:

- **Change Port Status LED Mode**: to read the port status correctly in the two different modes (Link/Act/Speed mode or PoE mode).

- **Reset the Switch**: to reboot and get the switch back to the previous configuration settings saved. Note that there is also an *Always-On PoE (soft reboot)* feature which allows the switch to reboot without affecting PoE port power via the Web UI or CLI.

- **Restore the Switch to Factory Defaults**: to restore the switch to its original factory default settings.

**Note**: Use the table below to determine which task is being performed by reading the LED behaviors while pressing and holding the Mode/Reset button. When the LED behavior displays correctly, release the button.

**Table 4: Mode/Reset Button Descriptions**

| Task to Perform | Press Button for | SYS LED Behavior | Port Status LED Behavior |
|---|---|---|---|
| Change LED Mode | 0 ~ 2 seconds | ON Green | LED status will change based on the mode selected. |
| Reset the Switch | 2 ~ 7 seconds | Blinking Green | ALL LEDs Off. |
| Restore to Defaults | 7 ~ 12 seconds | Blinking Green | ALL LEDs stay On. |

## Back Panel

The back panel provides two power supply slots and an airflow opening. **Caution**: Be sure to leave adequate room for the airflow openings on both side panels and on the back panel.
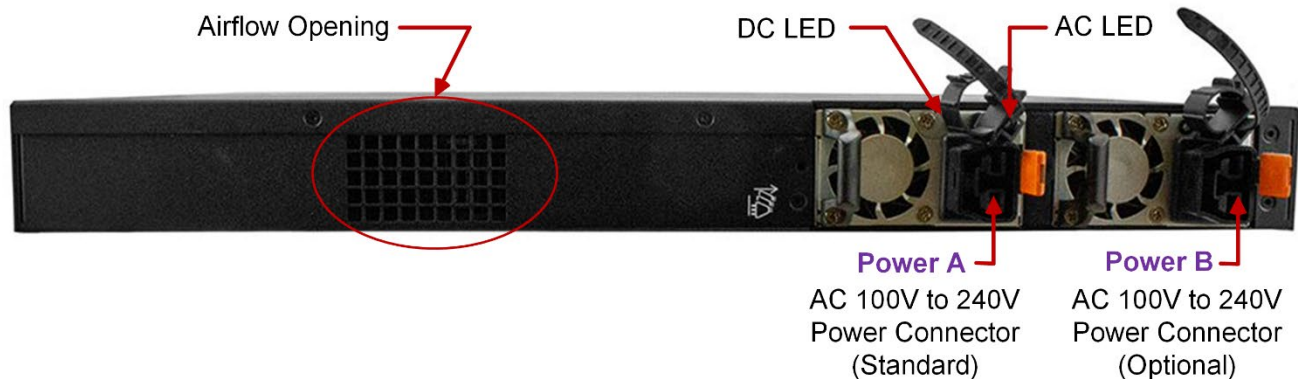
# 2. Installation

This chapter provides a high-level procedure for installing the SM24TBT2DPB followed by more detailed information about the connections and power supplies.

## Safety Precautions

Please follow the safety precautions described below when installing and operating the switch.

## Cautions and Warnings

**Definitions**

Cautions indicate that there is the possibility of poor equipment performance or potential damage to the equipment. Warnings indicate that there is the possibility of injury to person.

Cautions and Warnings appear here and may appear throughout this manual where appropriate. Failure to read and understand the information identified by this symbol could result in poor equipment performance, damage to the equipment, or injury to persons.

**Caution**: EQUIPMENT IS FOR INDOOR USE ONLY!

**Caution**: Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

**Caution** : While installing or servicing the power supply, wear a grounding device and observe all electrostatic discharge precautions. Failure to observe this caution could result in damage to, or failure of the power supply.

**Warnings**

Warning: Do not connect the power supply to an external power source before installing it into the chassis. Failure to observe this warning could result in an electrical shock, even death.

WARNING: The power supply has a provision for grounding. Equipment grounding is vital to ensure safe operation. The installer must ensure that the power supply is properly grounded during and after installation. Failure to observe this warning could result in an electric shock, even death.

WARNING: A readily accessible, suitable National Electrical Code (NEC) or local electrical code approved disconnect device and branch-circuit protector must be part of the building's installed wiring to accommodate permanently connected equipment. Failure to observe this warning could result in an electric shock, even death.

WARNING: Turn the external power source OFF and ensure that the power supply is disconnected from the external power source before performing any maintenance. Failure to observe this warning could result in an electrical shock, even death.

WARNING: Ensure that the disconnect device for the external power source is OPEN (turned OFF) before disconnecting or connecting the power leads to the power supply. Failure to observe this warning could result in an electric shock, even death.

See Electrical Safety Warnings below for Electrical Safety Warnings translated into multiple languages.

See the ANSI/NECA/BICSI 568-2006 Standard for Installing Commercial Building Telecommunications Cabling.

**Ethernet and PoE Intra-Building Cabling Warning**

Warning: Ethernet cables are intended for intrabuilding use only. Connecting your Lantronix switch directly to Ethernet cables that run outside the building in which the switch is housed will void the user's warranty and could create a fire or shock hazard.

**High Risk Activities Disclaimer**

Components, units, or third-party products used in the product described herein are NOT fault-tolerant and are NOT designed, manufactured, or intended for use as on-line control equipment in the following hazardous environments requiring fail-safe controls: the operation of Nuclear Facilities, Aircraft Navigation or Aircraft Communication Systems, Air Traffic Control, Life Support, or Weapons Systems ("High Risk Activities"). Lantronix and its supplier(s) specifically disclaim any expressed or implied warranty of fitness for such High Risk Activities.

**Network Safety**

This subclause sets forth a number of recommendations and guidelines related to safety concerns. The list is neither complete nor does it address all possible safety issues. The designer is urged to consult the relevant local, national, and international safety regulations to verify compliance with the appropriate requirements. LAN cabling systems described in this clause are subject to at least four direct electrical safety hazards during their installation and use. These hazards are as follows:

    a) Direct contact between LAN components and power, lighting, or communications circuits.

    b) Static charge buildup on LAN cabling and components.

    c) High-energy transients coupled onto the LAN cabling system.

    d) Voltage potential differences between safety grounds to which various LAN components are connected.

Such safety hazards should be avoided or appropriately protected against for proper network installation and performance. In addition to provisions for proper handling of these conditions in an operational system, special measures should be taken to verify that the intended safety features are not negated during installation of a new network or during modification of an existing network.

Equipment shall comply with all applicable local and national codes related to safety.

Note that this manual provides links to third part web sites for which Lantronix is not responsible.

**US Electrical System Design Standards**

These US standards define all electrical rules and requirements necessary to connect and use electricity.

In the US, the basic standards to adhere to when designing electrical systems are:

- American National Standards Institute (ANSI)
- National Electrical Manufacturers Association (NEMA)
- Institute of Electrical and Electronics Engineers (IEEE) Standards
- National Electric Code (NEC) (required for electric service up to 600 Volts)
- IEEE color book publications (for IT installations in different facilities)

**Other Worldwide Standards**

Other standards to use worldwide are based on IEC (International Electrotechnical Commission) Standards:

- BS (British Standards)
- DIN (German Standards)
- CEI (Italian Standards)
- EN (European Norm) Standards

**Low-line vs High-line Input Voltage Selection**

Use diligence when selecting the proper input voltage in the Americas and other world regions that follow North American commercial wiring practices. Selecting low-line operation vs high-line operation affects power supply output capacity and reliability, power supply thermal operation, and power conversion efficiency.

# Electrical Safety Warnings

Electrical Safety

IMPORTANT: This equipment must be installed in accordance with safety precautions.

Elektrische Sicherheit

WICHTIG: Für die Installation dieses Gerätes ist die Einhaltung von Sicherheitsvorkehrungen erforderlich.

Elektrisk sikkerhed

VIGTIGT: Dette udstyr skal installeres i overensstemmelse med sikkerhedsadvarslerne.

Elektrische veiligheid

BELANGRIJK: Dit apparaat moet in overeenstemming met de veiligheidsvoorschriften worden geïnstalleerd.

Sécurité électrique

IMPORTANT: Cet équipement doit être utilisé conformément aux instructions de sécurité.

Sähköturvallisuus

TÄRKEÄÄ: Tämä laite on asennettava turvaohjeiden mukaisesti.

Sicurezza elettrica

IMPORTANTE: questa apparecchiatura deve essere installata rispettando le norme di sicurezza.

Elektrisk sikkerhet

VIKTIG: Dette utstyret skal installeres i samsvar med sikkerhetsregler.

Segurança eléctrica

IMPORTANTE: Este equipamento tem que ser instalado segundo as medidas de precaução de segurança.

Seguridad eléctrica

IMPORTANTE: La instalación de este equipo deberá llevarse a cabo cumpliendo con las precauciones de seguridad.

Elsäkerhet

OBS! Alla nödvändiga försiktighetsåtgärder måste vidtas när denna utrustning används.

# What's in the Box

Verify that you have received the following items. Contact your place of purchase if any item is missing or damaged. Please save the packaging for possible future use.

If ordered as SM24TBT2DPB-DE (for Digital Electricity applications):

- One switch with one power supply included
- Two 19" rack mount brackets
- Eight screws
- One DB9F to RJ45 cable
- Four rubber feet
- One LTX insert card
- One printed Quick Start Guide

(If ordered as SM24TBT2DPB-2XPS-DE, two power supplies are included.)

If ordered as SM24TBT2DPB-xx** (for AC or DC powered applications):

All of the above items plus:

- One Saf-D adapter cable
- Country-specific IEC adapter power cord(s) for low/high power AC and DC

(If ordered as SM24TBT2DPB-2XPS-xx-DE, two power supplies and two sets of Saf-D adapter cables and power cords are included.)

**** Power Cord Included**: Power cord is selected to handle the higher power capability of this switch; use only power cords provided with your switch. To order the corresponding country specific power cord(s), add the extension to the end of the SKU. For example: SM24TBT2DPB-NA = North America, -LA = Latin America, -EU = Europe, -UK = United Kingdom, -SA = South Africa, -JP = Japan, -OZ = Australia, -BR = Brazil.

**Note**:

**a.** The switch is an indoor device. If you need to use it to connect outdoor devices such as outdoor IP cameras or outdoor WiFi Aps with cable, you must install an arrester on the cable between outdoor device and the switch.
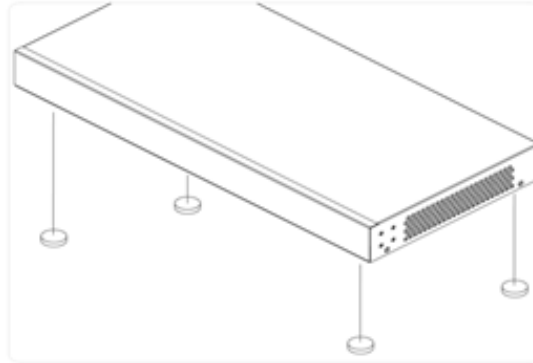


**Add an arrester between outdoor device and this switch**

**b.** The marking information is located at the bottom of apparatus (IEC 62368-1).

## Mounting the Switch on Desk or Shelf

1. Verify that the workbench is sturdy and reliably grounded.
2. Attach the four adhesive rubber feet to the bottom of the switch.

## Safety Instructions for Rack Mount Installations

The instructions below (or similar) are intended for rackmount installation environments:

1. Elevated Operating Ambient: if installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may exceed room ambient. Install the equipment in an environment compatible with the maximum ambient temperature (Tma) specified.
2. Reduced Air Flow: install the equipment in a rack so that the amount of air flow required for safe operation is not compromised.
3. Mechanical Loading: Mount the equipment in the rack so that a hazardous condition does not occur due to uneven mechanical loading (weight distribution/rack balance).
4. Circuit Overloading: consider the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on overcurrent protection and supply wiring. Consider all equipment nameplate ratings when addressing this concern.
5. Reliable Earthing: maintain reliable earthing of rack-mounted equipment; pay particular attention to supply connections other than direct connections to the branch circuit (e.g., use of power strips).

# Mounting the Switch in a 19-inch Rack

1.  Attach the mounting brackets to both sides of the chassis. Insert screws and tighten with a screwdriver to secure the brackets.
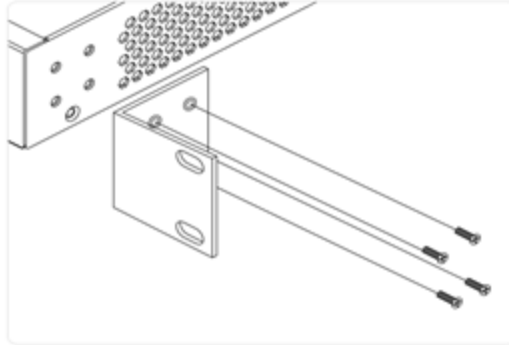
2.  Place the switch on a rack shelf in the rack. Push it in until the oval holes in the brackets align with the mounting holes in the rack posts.
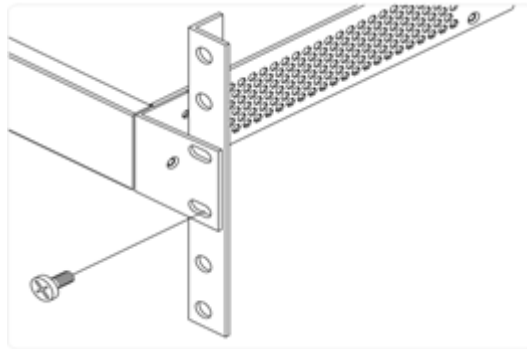
3.  Attach the brackets to the posts. Insert screws and tighten them.

# Installing SFP Modules

You can install or remove a mini-GBIC SFP module from an SFP port without having to power off the switch.

**Note**: The SFP ports should use UL Listed Optional Transceiver product, Rated 3.3Vdc, Laser Class 1. See the SFP manual for specific cautions, warnings, and instructions. See the Lantronix SFP page for our full range of Optical Devices.

During installation and maintenance, avoid direct exposure to laser beams. Specifically, do not look into laser ports. Ensure that each SFP port at which laser beams are (or will be) present is occupied by an SFP that is locked in position.

1. Position the SFP device at either installation slot, with the SFP label facing up (Port 25) or down (Port 26).
2. Carefully slide the SFP device into the slot, aligning it with the internal installation guides.
3. Press firmly to ensure that the SFP device is firmly seated against the internal mating connector.
4. Attach an appropriate cable into the SFP module port.
5. Attach the other end of the cable to the other device.

**Note**: Do not remove and replace SFP modules more often than necessary; excessive SFP removing/replacing can shorten the SFPs useful life.
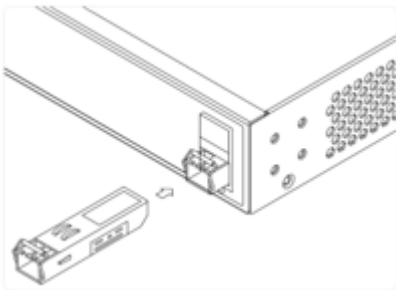
# Grounding

**ATTENTION**:

This case must be earth grounded.
No DC input may be earth grounded.
Use Isolated Power Supply.

# 3. Power Supply Information

The SM24TBT2DPB ships with one PS-ACDC-1200 power supply, which enables up to 900W of total PoE power when connected to low-line AC or DC power or 1080W with high-line AC or DC power. A second PS-ACDC-1200 power supply can be installed for redundancy or to provide increased PoE power. With two hot-swappable power supplies the switch can provide up to 1800W of total PoE power when connected to low-line AC or DC power or 2150W with high-line AC or DC power.

## Cautions and Warnings

**WARNING!** Hot Surface Do Not Touch

**CAUTION** HAZARDOUS AREA: Do not remove this cover. Trained service people only. No serviceable components inside.

**DC INPUT** FOR UL, CUL & CCC ONLY USE

**Warning**! For continued protection against risk of fire, replace only with same type and rating of fuse.

**Warning**: This is a Class A product. In a domestic environment this product may cause radio interference, in which case the user may be required to take adequate measures.



**PS-ACDC-1200 Power Supply**

## PS-ACDC-1200 Features

Secondary AC & DC Modular Power Supply

- 1080 Watts PoE Output Max.
- Dual Hot-Swappable Power Supplies
- Power Redundancy
- Failover
- AC low-line: 100 - 120VAC
- AC high line: 200 - 277VDC
- HVDC low-line : 194 – 254VDC
- HVDC high-line: 306 - 334VDC
- Saf-D connector for HVDC input
- Saf-D to IEC cable provided for AC input
- Warranty: 5-Years for Power Supply

# PS-ACDC-1200 Specifications

**AC INPUT**:
1000W: 100-120Vac, 50/60Hz or
       50-60Hx, 12A MAX.
1200W: 200-277Vac, 50/60Hz or
       50-60Hz, 8.5A MAX.

**DC INPUT**:
217VDC, 7.5A for 1000W
306-334VDC, 7.5A for 1200W

**DC OUPUT**:
1200W: 54.5Vdc/22.02A
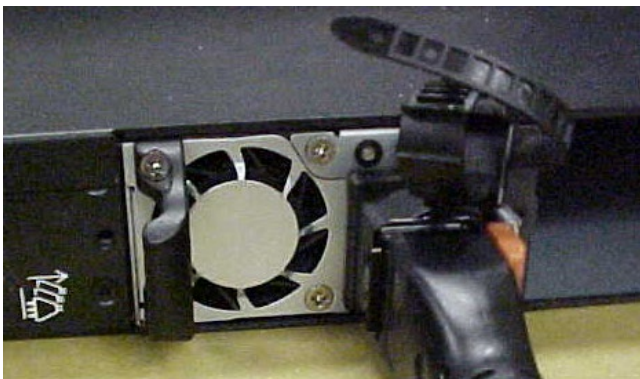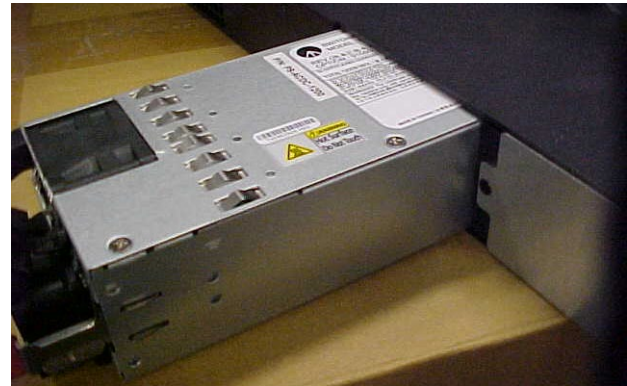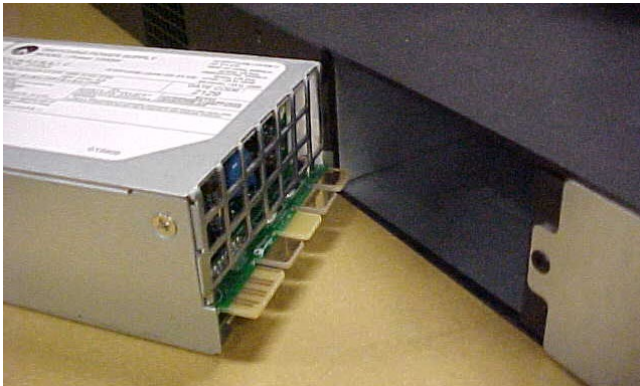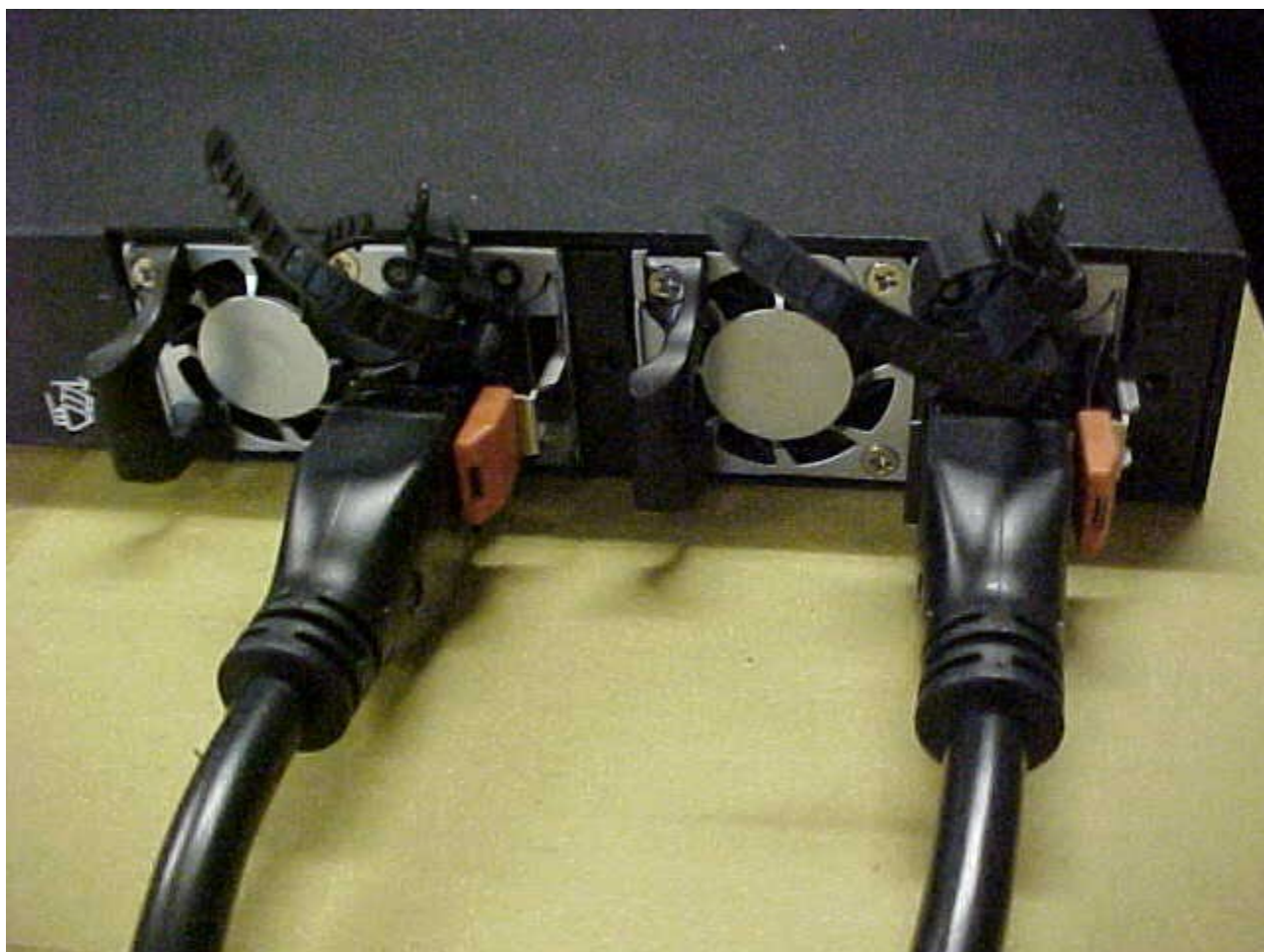
1000W: 54.5Vdc/18.5A
TOTAL 1200W MAX.

# PS-ACDC-1200 Install Orientation

**Caution**: You must install the PS-ACDC-1200 Power Supply with the edge connector down (the label facing up). If installed otherwise, the edge connector may be damaged.
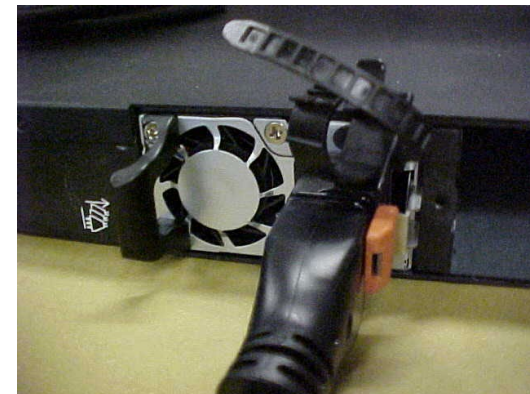
## Saf-D-Grid® Connector

**First Mate, Last Break Ground Contact**: Provides the safety of an earthing path before engagement of the power contacts.



**First Mate, Last Break Ground Contact**
- Ultra Short Receptacle

**Integral Latch**
- T-Latch Straight Plug

**Integral Latch**: Connectors cannot be accidentally unmated, preventing unwanted power loss to critical equipment.

**Hot plug Rated**: The connectors are rated for current interruption for both electronic and electrical loads.

**Touch Safe/Shock Protection**: Minimizes the risk of personal contact with a hazardous voltage. Passes UL & IEC finger probe (plug & receptacle) and 3mm probe tests (receptacle).

**Arcing Protection**: Housing contains the arc if connectors are mated or unmated while under load, minimizing risk to personnel.



**Saf-D adapter cable for use with
PS-ACDC-1200 Power Supply**
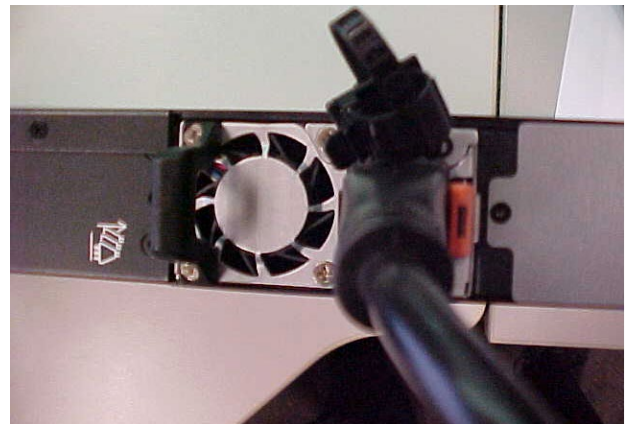
**PS-ACDC-1200 Power Supply
Installed and Connected**

Note: Saf-D-Grid is a registered trademark of Anderson Power Products.

## If Using AC Power

1. Connect the Saf-D plug of the Saf-D adapter cord to the Saf-D receptacle on the switch power supply.
2. Connect the IEC plug end of the Saf-D adapter cord to the IEC receptacle end of the power cord.
3. Plug the power cord into an AC wall outlet.
4. Check the SYS LED. If it is ON, the power connection is correct.

If using two power supplies, repeat steps 1-4 for the second power supply.

## If Using DC Power

1. Connect the Saf-D plug of the Saf-D adapter cord to the Saf-D receptacle on the switch power supply.
2. Cut off the receptacle end of the Saf-D adapter cord, strip the insulation on each wire back approximately 0.25" (6mm). Twist the stranded wire ends to facilitate connection of the wires to an appropriate DC power source of your choice, ensuring the specifications meet the designated DC power requirements. (See "PS-ACDC-1200 Output Specifications" for acceptable DC power source specifications).

## If Using Digital Electricity™ (DE)

1. Follow the DE equipment provider's instructions to connect the Saf-D plug on the cable to the Saf-D receptacle on the switch's power supply.

* Digital Electricity is a trademark of VoltServer. For more information about Digital Electricity, visit https://www.voltserver.com/.

# Replacing a High Voltage (HVAC/HVDC) Power Supply

The switch requires two power supplies for redundancy. With one power supply providing the necessary power for operation, you can replace the other power supply during operation.

**Before you begin**:

- The replacement power supply must have the same wattage as the power supply being replaced.
- An HVAC/HVDC power source must be within reach of the power cable that will be used with the replacement power supply. If you are using n+n power redundancy, there must be a separate power source for each power supply installed in the chassis.
- There must be an earth ground connection to the chassis in which you are installing the replacement power supply. HVAC/HVDC power supplies connected to AC power sources are automatically grounded by their power cable when connected to the power supply and AC power source. HVAC/HVDC power supplies connected to DC power sources have Saf-D-Grid power cables with three connectors on the power source end; you connect one of those connectors to the earth ground.

**Step 1: Remove an HVAC/HVDC Power Supply** as follows:

**a)** Turn off the circuit breaker for the power feed to the power supply that you are replacing. Be sure that the LEDs turn off on the power supply that you are removing.

**b)** Remove the power cable from the power supply by pressing the tab on the top of the Saf-D-Grid connector and pull the cable and connector out of the power supply.

**c)** Grasp the power supply handle while pressing the colored release latch towards the power supply handle.

**d)** Place your other hand under the power supply to support it while you slide it out of the chassis.

**Caution**: Do not touch the electrical connections on the back side of the module and prevent anything else from contacting and damaging the connectors.

**Step 2: Install the Replacement Power Supply** as follows:

**a)** Holding the replacement power supply with one hand underneath the module and the other hand holding the handle, turn the power supply so that its release latch is on the right side and align the back end of the power supply (the end with the electrical connections) to the open power supply slot before carefully sliding the power supply all the way into the slot until it clicks into place.

**Note**: If the power supply does not fit into the open slot, turn the module over before sliding it carefully into the open slot.

**b)** Test the installation by trying to pull the power supply out of the slot without using the release latch. If the power supply does not move out of place, it is secured in the slot. If the power supply moves, carefully press it all the way into the slot until it clicks in place.

**c)** Attach the Saf-D-Grid end of the adapter cable to the electrical outlet on the front of the power supply.

**d)** Attach the other end of the Saf-D adapter cable to the IEC end of the power cable.

- For an AC power source, plug the other end of the power cable into the AC power source.
- For a HVDC power source, cut off the receptacle end of the Saf-D adapter cord, and strip the insulation on each wire back approximately 0.25" (6mm). Twist the stranded wire ends to facilitate connection of the wires to an appropriate DC power source of your choice, ensuring the specifications meet the designated DC power requirements as listed previously in this Guide. Verify that the circuit breaker is turned off and then connect each of the three cable connectors to the appropriate DC and grounding terminals on the power source. If there is a cover plate for the DC terminals, install the plate to prevent accidental contact with the terminals.

**e)** If using an HVDC power source, turn on the circuit breaker for the power source.

**f)** Verify that the power supply is operational by making sure that the power supply LED is green.

**g)** If using Digital Electricity (DE), follow the DE equipment provider's instructions to connect the Saf-D plug on the cable to the Saf-D receptacle on the switch's power. Note: Digital Electricity is a trademark of VoltServer. For more information about Digital Electricity, visit https://www.voltserver.com/.

## Power Module Monitoring Change

SM24TBT2DPB FW VB6.64.0079 changed the way that the switch power supplies are monitored:

1. When the system is turned on and the switch finds that Power A and B are different PSUs, the management software will turn off PSU output power.

2. When the system has just one PSU working, and then insert a second PSU is inserted into a power slot, if the second PSU inserted is a different than the existing PSU, the second PSU inserted will have its output power turned off.

3. When Power A and B are different PSUs, the PoE Power Budget will maintain the status quo and will not be recalculated and adjusted.

4. When Power A and B are different, then the power module Event Log/Trap are different for Power A and B.

# 4.  Initial Switch Configuration

## Initial Switch Configuration via Web Browser

After powering up the switch for the first time, perform initial switch configuration using a web browser. For managing other switch features, see the Web User Guide for details.

To begin the initial configuration, you must reconfigure your PC's IP address and subnet mask to make sure the PC can communicate with the switch. After changing PC's IP address (e.g., 192.168.1.250), you can access the switch Web UI using the switch's default IP address (192.168.1.77) and default Subnet Mask ( 255.255.255.0).

1.  Power up the PC that you will use for the initial configuration. Please make sure the PC has the Ethernet RJ45 connector to be connected to the switch via standard Ethernet LAN cable.

2.  Reconfigure the PC's IP address and Subnet Mask as below, so that it can communicate with the switch. The method to change the PC's IP address, for example, for a PC running Windows® 7/8.x/10, is:

    2a: Type "network and sharing" into the Search box in the Start Menu.

    2b: Select Network and Sharing Center

    2c: Click on Change adapter settings on the left of PC screen

    **Note**: You can skip step 2a to 2c by pressing WinKey+R and type "ncpa.cpl" command to get to step 2d directly.

    2d: Right-click on your local adapter and select Properties

    2e: In the Local Area Connection Properties window highlight Internet Protocol Version 4 (TCP/IPv4) then click the Properties button.

    **Note**: Be sure to record all your PC's current IP settings to be able to restore them later.

    2f:  Select the radio button Enter the IP address for the PC (e.g., any IP address not in use, and between 192.168.1.78 and 192.168.1.254), Subnet mask (e.g., 255.255.255.0), and Default gateway that corresponds with your network setup. Then enter your Preferred and Alternate DNS server addresses.

    2g: Click **OK** to change the PC's IP address.

3.  Power up the switch to be initially configured and wait until it has finished its start-up processes.

4.  Connect the PC to any port on the switch using a standard Ethernet cable, and check the port LED on the switch to make sure the link status of the PC is OK.

5.  Run your Web browser on the PC; enter the factory default IP address to access the switch's Web interface.

If your PC is configured correctly, the switch Login page displays as shown below:
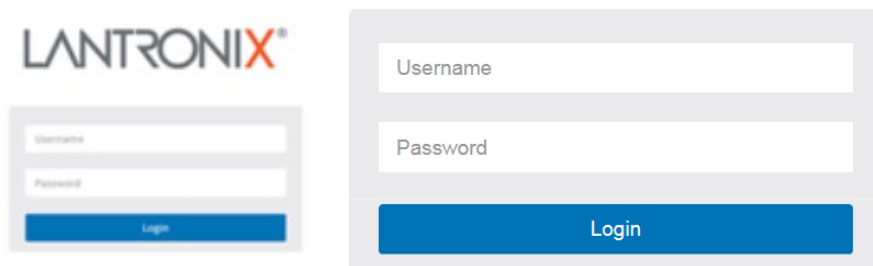


If you do not see the above Login page, try these steps:
- Refresh the web page.
- Check to see if there is an IP address conflict.
- Clear browser cookies and temporary internet files.
- Check your PC settings again and repeat step 2.

6.  Enter the factory default username (**admin**) and password (**admin**) on login page.

7.  Click "Login" to log into the switch. See the *Web User Guide* for additional information.

# Initial Switch Configuration via CLI

Use an RJ-45 cable to connect a terminal or PC/terminal emulator to the switch port to access the CLI.
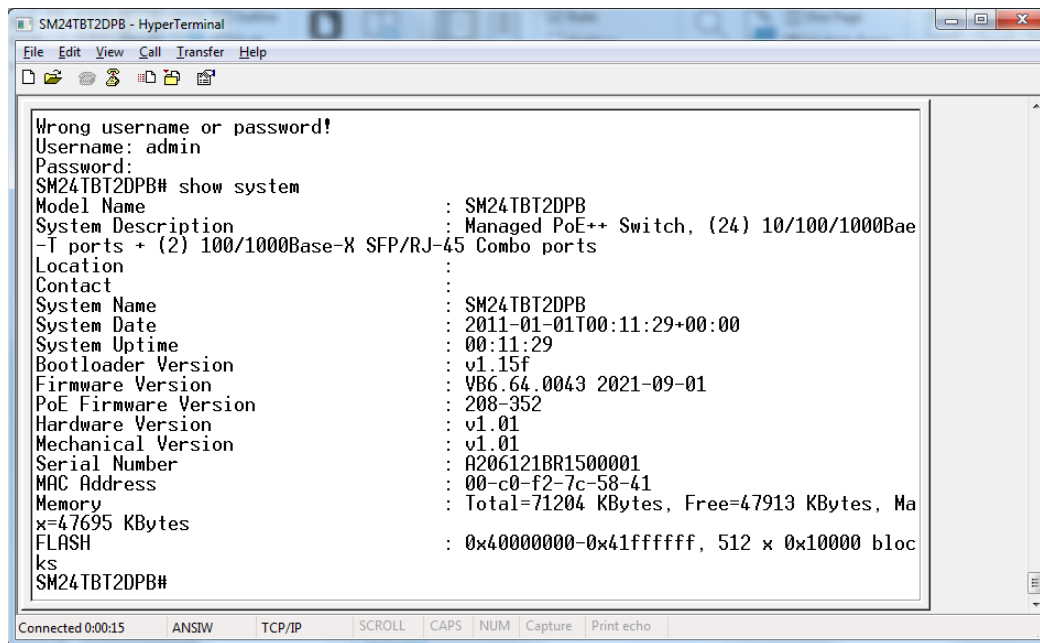
Attach the RJ-45 serial port on the switch front panel to the cable for Telnet/CLI configuration.

Attach the other end of the DB-9 cable to a PC running Telnet or a terminal emulation program such as HyperTerminal or Tera Term.

After powering up the switch for the first time, you can perform the initial switch configuration using the CLI (Command Line Interface). For managing other switch features, see the *CLI Reference* for details.

## Switch CLI Command Notes

The SM24TBT2DPB `show system` command:



```
SM24TBT2DPB - HyperTerminal

File  Edit  View  Call  Transfer  Help

Wrong username or password!
Username: admin
Password:
SM24TBT2DPB# show system
Model Name                        : SM24TBT2DPB
System Description                : Managed PoE++ Switch, (24) 10/100/1000Bae
-T ports + (2) 100/1000Base-X SFP/RJ-45 Combo ports
Location                          :
Contact                           :
System Name                       : SM24TBT2DPB
System Date                       : 2011-01-01T00:11:29+00:00
System Uptime                     : 00:11:29
Bootloader Version                : v1.15f
Firmware Version                  : VB6.64.0043 2021-09-01
PoE Firmware Version              : 208-352
Hardware Version                  : v1.01
Mechanical Version                : v1.01
Serial Number                     : A206121BR1500001
MAC Address                       : 00-c0-f2-7c-58-41
Memory                            : Total=71204 KBytes, Free=47913 KBytes, Ma
x=47695 KBytes
FLASH                             : 0x40000000-0x41ffffff, 512 x 0x10000 bloc
ks
SM24TBT2DPB#

Connected 0:00:15    ANSIW    TCP/IP    SCROLL  CAPS  NUM  Capture  Print echo
```

The SM24TBT2DPB show power management command with one PS-ACDC-1200 power supply installed:

```
SM24TBT2DPB# show power management
Power Management
==========================
Power                   : A        B
Detected PSU            : PSU-HV    None
Power Good              : Good      Fail
Power Input(AC/DC)      : Good      Fail
Power Input Voltage (V) : 123       ---
FAN Speed (RPM)         : 2911      0
Temperature (Degree C)  : 42        0
Operating Mode          : Redundant
SM24TBT2DPB#
```

**Note**: the PS-ACDC-1200 power supply is displayed as Detected PSU = "PSU-HV".

The SM24TBT2DPB `show power management` command with two PS-ACDC-1200 power supplies installed:

```
SM24TBT2DPB# show power management
Power Management
========================
Power                   : A         B
Detected PSU            : PSU-HV
Power Good              : Good      Good
Power Input(AC/DC)      : Good      Good
Power Input Voltage (V) : 123       123
FAN Speed (RPM)         : 3041      2954
Temperature (Degree C)  : 42        47
Operating Mode          :
SM24TBT2DPB#
```

The SM24TBT2DPB `show power management` command with two PS-ACDC-1200 power supplies installed in Boost mode:

```
SM24TBT2DPB# show power management
Power Management
========================
Power                   : A         B
Detected PSU            : PSU-HV    PSU-HV
Power Good              : Good      Good
FAN Speed (RPM)         : 2899      3022
Temperature (Degree C)  : 42        43
Operating Mode          : Boost
SM24TBT2DPB#
```

The SM24TBT2DPB `show power management` command with two PS-ACDC-1200 power supplies installed in Boost mode, then changed to Redundant mode:

```
SM24TBT2DPB(config)# do show power management
Power Management
========================
Power                   : A         B
Detected PSU            : PSU-HV    PSU-HV
Power Good              : Good      Good
FAN Speed (RPM)         : 2889      3015
Temperature (Degree C)  : 42        43
Operating Mode          : Boost
SM24TBT2DPB(config)# Power Redundant
SM24TBT2DPB(config)# do show power management
Power Management
========================
Power                   : A         B
Detected PSU            : PSU-HV    PSU-HV
Power Good              : Good      Good
FAN Speed (RPM)         : 2902      3013
Temperature (Degree C)  : 42        43
Operating Mode          : Redundant
SM24TBT2DPB(config)#
```
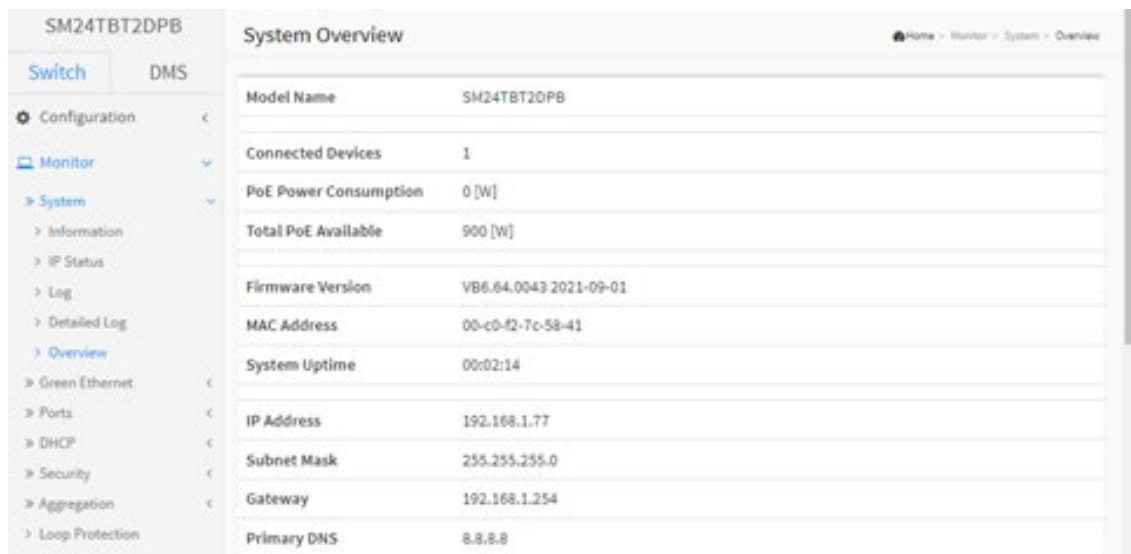
# Switch Configuration Web UI Notes

SM24TBT2DPB Configuration > System > Power Information with two PS-ACDC-1200 power supplies installed:
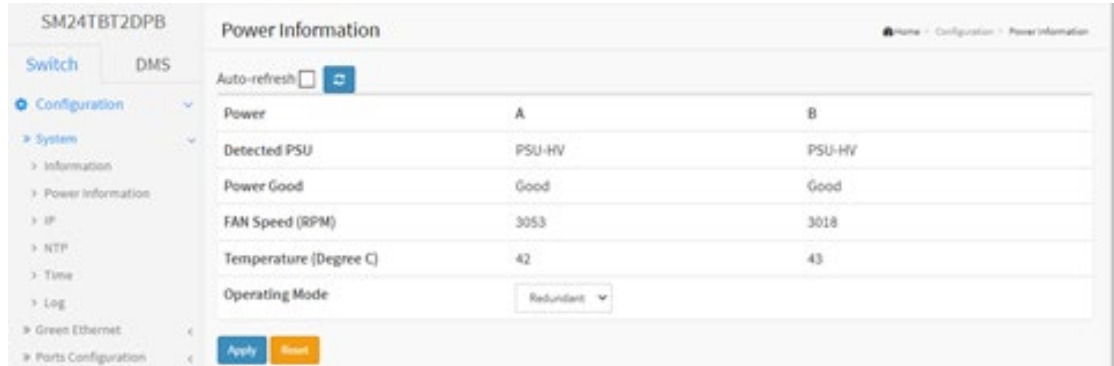


SM24TBT2DPB System Overview with one PS-ACDC-1200 power supply installed:



SM24TBT2DPB System Overview with one PS-ACDC-1200 power supply – shows Total PoE Available = 900W:

## SM24TBT2DPB-2XPS Power Supply Operating Mode Settings

The SM24TBT2DPB ships with one PS-ACDC-1200 power supply, which lets it supply up to 90 Watts per port. The SM24TBT2DPB with a second PS-ACDC-1200 power supply added, or SM24TBT2DPB-2XPS if shipped with the second power supply included, can provide full PoE++ output on all 24-ports with its two hot-swappable PS-ACDC-1200 power supplies.

When Power Supply Operating Mode = <u>Redundant</u> Mode at Configuration > System > Power Information:



With Power Supply Operating Mode configured as "Redundant" Mode, the two power supplies are mutually redundant. If one of the power supplies fails, the other power supply can keep the system working normally.

The PoE maximum output power of the two power supplies <u>cannot</u> be aggregated. The PoE maximum output Power Budget in "Redundant" Mode is equal to the PoE Budget of a single power supply.

With Power Supply Operating Mode set to <u>Boost</u> Mode:

**a**. When Power Supply Operating Mode is ser to "Boost" at the Configuration > System > Power Information page, the power supply redundancy function will be disabled. If one of the power supplies fails, and the PoE power consumption is over the other power supply's Max. PoE output power capability, the power supply will overload and shutdown this PoE switch.

**b**. The PoE maximum output power of the two power supplies <u>can</u> be aggregated. The PoE Max. PoE output Power Budget in Boost Mode is equal to the Power Supply A + Power Supply B.

SM24TBT2DPB-2XPS Power Supply Operating Mode = <u>Redundant</u> Mode (default) at Configuration > System > Power Information:

Power Supply Operating Mode = <u>Boost</u> Mode at Configuration > System > Power Information:

# 5.  Related Information

## Power Consumption Specifications

### 1. AC 100V@60Hz Input

| Device Status | Oper. Interface | AC Voltage (V) | AC Current Consumption (A) | Power Factor | Apparent Power (VA) | Real Power (W) |
|---|---|---|---|---|---|---|
| Non-loading | None | 100 | 0.32 | 0.937 | 32.00 | 29.98 |
| No PoE Loading | 1G RJ45 x 24 1G SFP x 2 | 100 | 0.43 | 0.930 | 43.00 | 39.99 |
| No PoE Loading | 1G RJ45 x 26 | 100 | 0.43 | 0.930 | 43.00 | 39.99 |
| PoE Full-loading | 1G RJ45 x 24 1G SFP x 2 | 100 | 10.44 | 0.995 | 1044.00 | 1038.78 |
| PoE Full-loading | 1G RJ45 x 26 | 100 | 10.45 | 0.995 | 1045.00 | 1039.78 |

**Note**:

Apparent Power (VA) = AC Voltage x AC Current Consumption.

Real Power (W) = Apparent Power (VA) x Power Factor.

### 2. AC 110V@60Hz Input

| Device Status | Oper. Interface | AC Voltage (V) | AC Current Consumption (A) | Power Factor | Apparent Power (VA) | Real Power (W) |
|---|---|---|---|---|---|---|
| Non-loading | None | 110 | 0.3 | 0.909 | 33.00 | 30.00 |
| No PoE Loading | 1G RJ45 x 24 1G SFP x 2 | 110 | 0.38 | 0.975 | 41.80 | 40.76 |
| No PoE Loading | 1G RJ45 x 26 | 110 | 0.38 | 0.975 | 41.80 | 40.76 |
| PoE Full-loading | 1G RJ45 x 24 1G SFP x 2 | 110 | 9.37 | 0.993 | 1030.70 | 1023.49 |
| PoE Full-loading | 1G RJ45 x 26 | 110 | 9.37 | 0.994 | 1030.70 | 1024.52 |

**Note**:

Apparent Power (VA) = AC Voltage x AC Current Consumption.

Real Power (W) = Apparent Power (VA) x Power Factor.

**3. AC 220V@50Hz Input**

| Device Status | Oper. Interface | AC Voltage (V) | AC Current Consumption (A) | Power Factor | Apparent Power (VA) | Real Power (W) |
|---|---|---|---|---|---|---|
| Non-loading | None | 220 | 0.23 | 0.580 | 50.60 | 29.35 |
| No PoE Loading | 1G RJ45 x 24 1G SFP x 2 | 220 | 0.27 | 0.661 | 59.40 | 32.96 |
| No PoE Loading | 1G RJ45 x 26 | 220 | 0.28 | 0.655 | 61.60 | 40.35 |
| PoE Full-loading | 1G RJ45 x 24 1G SFP x 2 | 220 | 5.52 | 0.987 | 1214.40 | 1198.61 |
| PoE Full-loading | 1G RJ45 x 26 | 220 | 5.52 | 0.987 | 1214.40 | 1198.61 |

**Note**:

Apparent Power (VA) = AC Voltage x AC Current Consumption.

Real Power (W) = Apparent Power (VA) x Power Factor.

**4. AC 240V@50Hz Input**

| Device Status | Oper. Interface | AC Voltage (V) | AC Current Consumption (A) | Power Factor | Apparent Power (VA) | Real Power (W) |
|---|---|---|---|---|---|---|
| Non-loading | None | 240 | 0.24 | 0.508 | 57.60 | 29.26 |
| No PoE Loading | 1G RJ45 x 24 1G SFP x 2 | 240 | 0.27 | 0.609 | 64.80 | 39.46 |
| No PoE Loading | 1G RJ45 x 26 | 240 | 0.28 | 0.597 | 67.20 | 40.12 |
| PoE Full-loading | 1G RJ45 x 24 1G SFP x 2 | 240 | 5.06 | 0.985 | 1214.40 | 1196.18 |
| PoE Full-loading | 1G RJ45 x 26 | 240 | 5.05 | 0.985 | 1212.00 | 1193.82 |

**Note**:

Apparent Power (VA) = AC Voltage x AC Current Consumption.

Real Power (W) = Apparent Power (VA) x Power Factor.

### 5. AC 264V@50Hz Input

| Device Status | Oper. Interface | AC Voltage (V) | AC Current Consumption (A) | Power Factor | Apparent Power (VA) | Real Power (W) |
|---|---|---|---|---|---|---|
| Non-loading | None | 264 | 0.24 | 0.444 | 63.36 | 28.13 |
| No PoE Loading | 1G RJ45 x 24 1G SFP x 2 | 264 | 0.28 | 0.547 | 73.92 | 40.43 |
| No PoE Loading | 1G RJ45 x 26 | 264 | 0.28 | 0.547 | 73.92 | 40.43 |
| PoE Full-loading | 1G RJ45 x 24 1G SFP x 2 | 264 | 4.60 | 0.983 | 1214.40 | 1193.76 |
| PoE Full-loading | 1G RJ45 x 26 | 264 | 4.60 | 0.982 | 1214.40 | 1192.54 |

**Note**:

Apparent Power (VA) = AC Voltage x AC Current Consumption.

Real Power (W) = Apparent Power (VA) x Power Factor.

### 6. AC 100V@60Hz Input

| Device Status | Oper. Interface | AC Voltage (V) | AC Current Consumption (A) | Power Factor | Apparent Power (VA) | Real Power (W) |
|---|---|---|---|---|---|---|
| Non-loading | None | 100 | 0.56 | 0.892 | 56.00 | 49.95 |
| No PoE Loading | 1G RJ45 x 24 1G SFP x 2 | 100 | 0.60 | 0.883 | 60.00 | 52.98 |
| No PoE Loading | 1G RJ45 x 26 | 100 | 0.60 | 0.900 | 60.00 | 54.00 |
| PoE Full-loading | 1G RJ45 x 24 1G SFP x 2 | 100 | 20.66 | 0.991 | 2066.00 | 2047.41 |
| PoE Full-loading | 1G RJ45 x 26 | 100 | 20.67 | 0.991 | 2067.00 | 2048.40 |

**Note**:

Apparent Power (VA) = AC Voltage x AC Current Consumption

Real Power (W) = Apparent Power (VA) x Power Factor

### 7. AC 110V@60Hz Input

| Device Status | Oper. Interface | AC Voltage (V) | AC Current Consumption (A) | Power Factor | Apparent Power (VA) | Real Power (W) |
|---|---|---|---|---|---|---|
| Non-loading | None | 110 | 0.52 | 0.877 | 57.20 | 50.16 |
| No PoE Loading | 1G RJ45 x 24 1G SFP x 2 | 110 | 0.55 | 0.883 | 60.50 | 53.42 |
| No PoE Loading | 1G RJ45 x 26 | 110 | 0.55 | 0.900 | 60.50 | 54.45 |
| PoE Full-loading | 1G RJ45 x 24 1G SFP x 2 | 110 | 18.62 | 0.992 | 2048.20 | 2031.81 |
| PoE Full-loading | 1G RJ45 x 26 | 110 | 18.64 | 0.990 | 2050.40 | 2029.90 |

**Note**:

Apparent Power (VA) = AC Voltage x AC Current Consumption

Real Power (W) = Apparent Power (VA) x Power Factor

### 8. AC 220V@50Hz Input

| Device Status | Oper. Interface | AC Voltage (V) | AC Current Consumption (A) | Power Factor | Apparent Power (VA) | Real Power (W) |
|---|---|---|---|---|---|---|
| Non-loading | None | 220 | 0.46 | 0.495 | 101.20 | 50.59 |
| No PoE Loading | 1G RJ45 x 24 1G SFP x 2 | 220 | 0.46 | 0.524 | 101.20 | 53.03 |
| No PoE Loading | 1G RJ45 x 26 | 220 | 0.46 | 0.524 | 101.20 | 53.03 |
| PoE Full-loading | 1G RJ45 x 24 1G SFP x 2 | 220 | 11.13 | 0.987 | 2448.60 | 2416.77 |
| PoE Full-loading | 1G RJ45 x 26 | 220 | 11.13 | 0.986 | 2448.60 | 2414.32 |

**Note**:

Apparent Power (VA) = AC Voltage x AC Current Consumption

Real Power (W) = Apparent Power (VA) x Power Factor

**9. AC 240V@50Hz Input**

| Device Status | Oper. Interface | AC Voltage (V) | AC Current Consumption (A) | Power Factor | Apparent Power (VA) | Real Power (W) |
|---|---|---|---|---|---|---|
| Non-loading | None | 240 | 0.47 | 0.446 | 112.80 | 50.31 |
| No PoE Loading | 1G RJ45 x 24 1G SFP x 2 | 240 | 0.47 | 0.473 | 112.80 | 53.35 |
| No PoE Loading | 1G RJ45 x 26 | 240 | 0.47 | 0.473 | 112.80 | 53.35 |
| PoE Full-loading | 1G RJ45 x 24 1G SFP x 2 | 240 | 10.20 | 0.984 | 2448.00 | 2408.83 |
| PoE Full-loading | 1G RJ45 x 26 | 240 | 10.20 | 0.985 | 2448.00 | 2411.28 |

**Note**:

Apparent Power (VA) = AC Voltage x AC Current Consumption

Real Power (W) = Apparent Power (VA) x Power Factor

**10. AC 264V@50Hz Input**

| Device Status | Oper. Interface | AC Voltage (V) | AC Current Consumption (A) | Power Factor | Apparent Power (VA) | Real Power (W) |
|---|---|---|---|---|---|---|
| Non-loading | None | 264 | 0.46 | 0.413 | 121.44 | 50.15 |
| No PoE Loading | 1G RJ45 x 24 1G SFP x 2 | 264 | 0.46 | 0.429 | 121.44 | 52.10 |
| No PoE Loading | 1G RJ45 x 26 | 264 | 0.46 | 0.438 | 121.44 | 53.19 |
| PoE Full-loading | 1G RJ45 x 24 1G SFP x 2 | 264 | 9.27 | 0.982 | 2447.28 | 2403.23 |
| PoE Full-loading | 1G RJ45 x 26 | 264 | 9.27 | 0.982 | 2447.28 | 2403.23 |

**Note**:

Apparent Power (VA) = AC Voltage x AC Current Consumption

Real Power (W) = Apparent Power (VA) x Power Factor

### 11. DC 184V Input

| Device Status | Oper. Interface | DC Voltage (V) | DC Current Consumption (A) | Real Power (W) | BTU/Hr. |
|---|---|---|---|---|---|
| Non-loading | None | 184 | 0.27 | 49.68 | 169.41 |
| Standby mode | 1G RJ45 x 24 1G SFP x 2 | 184 | 0.3 | 55.20 | 188.23 |
| Standby mode | 1G RJ45 x 26 | 184 | 0.3 | 55.20 | 188.23 |
| Full loading 60 minutes later | 1G RJ45 x 24 1G SFP x 2 | 184 | 11.0 | 2024.00 | 6901.84 |
| Full loading 60 minutes later | 1G RJ45 x 26 | 184 | 11.02 | 2027.68 | 6914.39 |

### 12. DC 264V Input

| Device Status | Oper. Interface | DC Voltage (V) | DC Current Consumption (A) | Real Power (W) | BTU/Hr. |
|---|---|---|---|---|---|
| Non-loading | None | 264 | 0.19 | 50.16 | 171.05 |
| Standby mode | 1G RJ45 x 24 1G SFP x 2 | 264 | 0.2 | 52.80 | 180.05 |
| Standby mode | 1G RJ45 x 26 | 264 | 0.2 | 52.80 | 180.05 |
| Full loading 60 minutes later | 1G RJ45 x 24 1G SFP x 2 | 264 | 7.59 | 2003.76 | 6832.82 |
| Full loading 60 minutes later | 1G RJ45 x 26 | 264 | 7.60 | 2006.40 | 6841.82 |

### 13. DC 265V Input

| Device Status | Oper. Interface | DC Voltage (V) | DC Current Consumption (A) | Real Power (W) | BTU/Hr. |
|---|---|---|---|---|---|
| Non-loading | None | 265 | 0.19 | 50.35 | 171.69 |
| Standby mode | 1G RJ45 x 24 1G SFP x 2 | 265 | 0.2 | 53.00 | 180.73 |
| Standby mode | 1G RJ45 x 26 | 265 | 0.2 | 53.00 | 180.73 |
| Full loading 60 minutes later | 1G RJ45 x 24 1G SFP x 2 | 265 | 9.04 | 2395.60 | 8169.00 |
| Full loading 60 minutes later | 1G RJ45 x 26 | 265 | 9.04 | 2395.60 | 8169.00 |

## 14. DC 400V Input

| Device Status | Oper. Interface | DC Voltage (V) | DC Current Consumption (A) | Real Power (W) | BTU/Hr. |
|---|---|---|---|---|---|
| Non-loading | None | 400 | 0.18 | 72.00 | 245.52 |
| Standby mode | 1G RJ45 x 24 1G SFP x 2 | 400 | 0.19 | 76.00 | 259.16 |
| Standby mode | 1G RJ45 x 26 | 400 | 0.19 | 76.00 | 259.16 |
| Full loading 60 minutes later | 1G RJ45 x 24 1G SFP x 2 | 400 | 6 | 2400.00 | 8184.00 |
| Full loading 60 minutes later | 1G RJ45 x 26 | 400 | 6 | 2400.00 | 8184.00 |

# Troubleshooting

## Basic Troubleshooting

1. Make sure your switch model supports the feature or function attempted; see Features on page 6 and check the Release Notes for your specific version.

2. Verify the install process; see chapter 3. Installation on page 17.

3. Verify the initial switch configuration; see chapter 4. Initial Switch Configuration on page 31.

4. Troubleshoot connected network devices to pinpoint the problem to the switch.

5. Run the System Diagnostics (ping, cable diagnostics, traceroute). See the Web User Guide or CLI Reference.

6. Reset the switch; see Mode/Reset Button on page 16.

7. Restore the switch to its factory default settings; see Mode/Reset Button on page 16.

8. If using the CLI, try configuring/testing via the Web UI and vice versa. See the Web User Guide or the CLI Reference.

## LED Summary

| Category | LED | Color | Function |
|---|---|---|---|
| Global | System/Alarm | Green | LED Off: The switch is not receiving power.<br>LED On: The switch is Powered On. |
| Global | Red / Alarm | Red | LED Off: AC Power Supply or Normal Power Supply.<br>LED On: Power not sufficient to power switch. |
| TP Ports 1-24 | Link/Act | Green/ Amber | LED Off: Port disconnection or link fail.<br>Green On: 1000M Ethernet link good.<br>Amber On: 100M/10M Ethernet link good.<br>Amber blinking: this port is receiving or transmitting data. |
| TP Ports 25-26 | Link/Act | Green/ Amber | LED Off: Port disconnection or link fail.<br>Green On: 1000M Ethernet link good.<br>Amber On: 100M/10M Ethernet link good.<br>Amber blinking: this port is receiving or transmitting data. |
| Fiber Ports 25-26 | Link/Act | Green/ Amber | LED Off: Port disconnection or link fail.<br>Green On: 10G/1000M Ethernet link good.<br>Amber On: 100M/10M Ethernet link good.<br>Amber blinking: this port is receiving or transmitting data. |
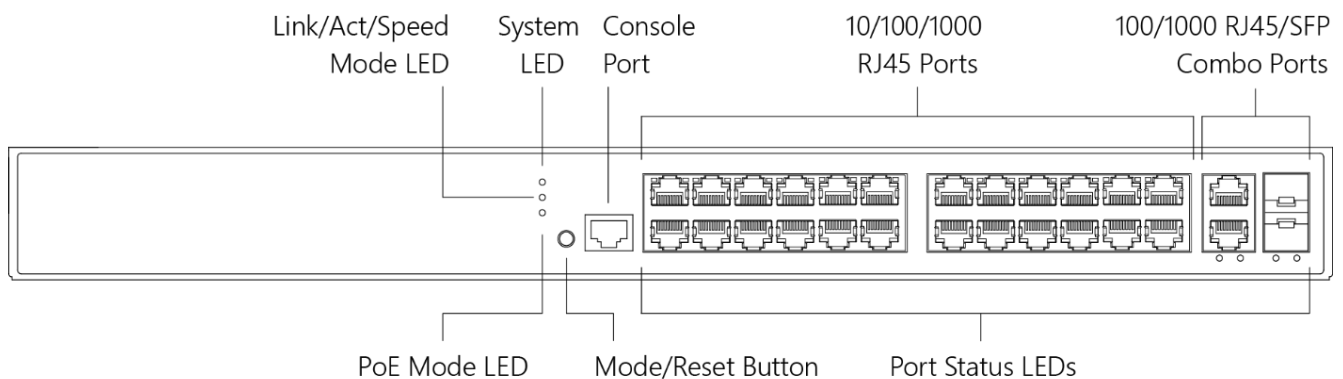
## LED Troubleshooting

Use the table below to troubleshoot problems by taking actions based on the suggested solutions within.

| Symptom | Possible Cause | Suggested Solution |
|---|---|---|
| **SYS**TEM LED is Off | The switch is not receiving power. | 1. Check if correct power cord is connected firmly to the switch and to the AC outlet socket.<br>2. Cycle switch by unplugging and plugging the power cord back into the switch.<br>3. If the LED is still off, try to plug power cord into a different AC outlet socket to make sure correct AC source is supplied. |
| **SYS**TEM LED is RED | An abnormal state was detected by the switch. | Check the switch system log via the Web UI for any abnormal state (e.g., exceeding operating temperature range) and take corresponding actions to resolve. |
| Port Status LED is Off in Link/Act/Speed Mode | The port is not connected, or the connection is not working. | 1. Check if the cable connector plug is firmly inserted and locked into the port at both the switch and the connected device.<br>2. Make sure the connected device is up and running correctly.<br>3. If the symptom still exists, try a different cable or different port, in order to identify if it is related to the cable or specific port.<br>4. Check if the port is disabled in the config settings in the Web UI. |
| Port Status LED is Off in PoE Mode | The port is not supplying power | 1. Check if the cable connector plug is firmly inserted and locked into the port at both the switch and the connected device.<br>2. Make sure that correct Ethernet cables are used.<br>3. If the symptom still exists, try a different cable or different port, in order to identify if it is related to the cable or specific port.<br>4. Check if the port is disabled in the config settings in the Web UI. |

# Troubleshooting PoE Problems

1. Note that this product is to be connected only to UL listed PoE networks and without routing to the outside plant.

2. Note that PoE devices initially draw more power during their boot up sequence than during normal operation.

3. Determine what the requested power was at the time of failure.

4. Identify how long the device was operational and what events may have occurred at the time of the error to help find the root cause (e.g., an IP phone that comes out of sleep and turns on fully may draw more power momentarily).

5. Determine if there is an issue with the PD drawing too much power; check the PD vendor documentation to determine why it exceeds the power it has negotiated with the switch.

6. Check the type and length of the cabling for any effect on the electrical characteristics and impact on the amount of power drawn on a port.

7. Investigate the power negotiation and confirm that the power requested by a device is also the amount of power that gets allocated. For example, using LLDP requires additional power budget for cabling between the PD and the PSE.

8. Use power measuring and testing equipment to determine if the PD overdraws the amount of power it gets allocated.

9. Enable CDP awareness via the Web UI or the CLI. CDP (Cisco Discovery Protocol) is a Cisco-proprietary Layer 2 protocol that runs on most Cisco equipment and shares information about directly connected Cisco equipment. PoE switches with CDP enabled can recognize Cisco powered devices such as IP phones and WAPs. The actual power requirement can be advertised by the powered device, and the unused class power is returned to the switch power budget.

# Compliance Information

## FCC Regulations

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at the user's own expense.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

## Canadian Regulations

This digital apparatus does not exceed the Class A limits for radio noise for digital apparatus set out on the radio interference regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la Class A prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

## CE Mark

This product carries the CE mark since it has been tested and found compliant with the following standards:

- Safety: EN 62368-1, CSA C22.2 No. 62368-1:19
- Emissions: EN 55022, EN 55032 Class A
- Immunity: EN 55024

## RoHS, REACH and WEEE Compliance Statement

Please visit http://www.lantronix.com/legal/rohs/  for Lantronix statement about RoHS, REACH and WEEE compliance.

## Declaration of Conformity

Manufacture's Name : Lantronix, Inc.
Manufacture's Address : 48 Discovery, Suite 250, Irvine, CA 92618, USAU.S.A.

Declares that the products: SM24TBT2DPB-DE, SM24TBT2DPB-xx, SM24TBT2DPB-2XPS-DE, and SM24TBT2DPB-2XPS-xx

Conform to the following Product Regulations:

> FCC Part 15 Class A, EN 55032:2012, BS EN 55032, EN 55024:2010, CISPR 32 Class A
> Directive 2014/30/EU, Directive 2015/863/EU
> Low-Voltage Directive 2014/35/EU
> UL 62368-1, 3rd Ed., Issue Date: 2019-12-13, Revision Date: 2021-10-22.
> CSA C22.2 No. 62368-1:19, 3rd Ed., Issue Date: 2019-12-13, Revision Date: 2021-10-22.
> EN 50581:2012
> EN 55011: 2009 +A1: 2010 (Group 1, Class A)
> EN 61000-3-2, BS EN 61000-3-2, EN 61000-3-2, BS EN 61000-3-2,
> EN 55024: 2010 / EN 61000-6-2: 2005
> EN55022/EN61000-6-4 , EN55024/EN61000-6-2, IEC/EN61000-4-2, IEC/EN61000-4-3,
> IEC/EN61000-4-4, IEC/EN61000-4-5, IEC/EN61000-4-6, IEC/EN61000-4-8,
> IEC60068-2-27, IEC60068-2-32, and IEC60068-2-6
> IEC 61000-4-11, EN 55035, BS EN55035

With the technical construction on file at the above address, this product carries the CE Mark

I, the undersigned, hereby declare that the equipment specified above conforms to the above Directive(s) and Standards(s).

Place: Minnetonka, Minnesota
Date: July 19, 2022
Signature: *Fathi Hakam*
Full Name: Fathi Hakam
Position: Vice President of Engineering

## Package and Device Labels

The package and device labels provide information that will be helpful when calling Technical Support.



**Box Label**



**Device Label**

# Record Device and System Information

After performing the troubleshooting steps, and before calling or emailing Technical Support, please record as much information as possible in order to help the Tech Support Specialist.

1. Select the Monitor > System > Information or the Monitor > System > Overview menu path. From the CLI, use the **show system**, **show version**, **show power**, and **show poe** commands to gather the information below or as requested by the Lantronix Technical Support Specialist.

2. Model Name: _____     Hardware Version: _____

Serial Number: _____     Firmware Version: _____

PoE Firmware Version: _____     Number of Power Supplies installed:
_____

Power Supply Model(s): _____     Power Status _____

3. LED Status: _____
_____

4. Provide additional information to your Tech Support Specialist. See the "Troubleshooting" section above.

Your Lantronix service contract number: _____

Describe the failure: _____
_____
_____
_____

Describe any action(s) already taken to resolve the problem (e.g., changing mode, rebooting, etc.): _____
_____
_____
_____

The serial and revision numbers of all involved Lantronix products in the network: _____
_____
_____

Describe your network environment (layout, cable type, etc.): _____
_____
_____

Network load and frame size at the time of trouble (if known): _____

PD equipment used: _____
_____
_____

The device history (i.e., have you returned the device before, is this a recurring problem, etc.): _____
_____
_____
_____

Any previous Return Material Authorization (RMA) numbers: _____

# LANTRONIX®

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www.lantronix.com/about/contact.