SM12DP2XA

Managed Gigabit Ethernet Fiber Switch

(12) 100/1000Base-X SFP Slots + (2) 1G/10G SFP+ slots +
(2) 10/100/1000Base-T

Install Guide

33751 Rev. F

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SM12DP2XA Managed Gigabit Ethernet Fiber Switch Install Guide 33751 Rev. F

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Revision History

Rev	Date	Description
A	6/25/18	Initial release at FW v7.10. 1423 2018-05-16.
B	7/27/18	Update DC Input terminal and compliance information.
C	8/22/18	Correct the default IP address.
D	1/20/20	Update for FW v v7.10. 2307; add Traffic Monitor back to DMS and update DC power supply information.
E	6/15/20	FW v7.10.2544: add Rapid Ring and Auto-logout features and ordering information.
F	7/28/21	Add 25130 power supply information. FW v7.20.0063: add SFTP copy commands, Gateway Address binding interface, and ACL API commands. Update Safety certification from EN60950 or IEC60950 to IEC62368-1/EN62368-1.

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.

Cautions

While installing or servicing the power module, 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 module.

Warnings

Warning: Do not connect the power module 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: Equipment grounding is vital to ensure safe operation. The installer must ensure that the power module 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 any external power source OFF and ensure that the power module 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 module. Failure to observe this warning could result in an electric shock, even death.

See Electrical Safety Warnings on page 32 for Electrical Safety Warnings translated into multiple languages.

Contents

Introduction

The SM12DP2XA Managed Gigabit Ethernet Fiber Switch is a next-generation Fiber Switch offering full suite of L2 features and additional 10GbE uplink connections. Advanced L3 features such as Static Route deliver better cost performance and lower total cost of ownership in Enterprise networks or backbone via fibber or copper connections.

The SM12DP2XA provides 12 GbE SFP ports, 2 RJ45 ports, 2 10GbE SFP+ ports and RJ45 Console port with built-in AC and DC dual power supplies. SM12DP2XA provides front panel access to all power, data, and management ports, in a compact form factor for desktop, wall-mount, or rack-mount installations.

The SM12DP2XA delivers management simplicity, better user experience, and lowest total cost of ownership. The built-in Device Managed System (DMS) is designed to be extremely easy to use, manage, and install IP Phones, IP Cameras, or Wifi-APs for Enterprise applications.

Safety Statements

 **CAUTION**: Circuit devices are sensitive to static electricity, which can damage their delicate electronics. Dry weather conditions or walking across a carpeted floor may cause you to acquire a static electrical charge. To protect your device:

- Touch the metal chassis of your computer to ground the static electrical charge before you pick up the circuit device.
- Pick up the device by holding it on the left and right edges only.
- If you need to use an outdoor device connected to this device with cable, then you must use an arrester on the cable between outdoor device and this device.

 NOTE: The switch is an indoor device; if it will be used in an outdoor environment or to connect with an outdoor device, then it must use a lightning arrester to protect the switch

 **WARNING**:

- Self-demolition of this product is strictly prohibited. Damage caused by self-demolition will be charged for repairing fees. See the US EPA Electronics Donation and Recycling website.
- Do not place product outdoors.
- Before installation, make sure input power supply and product specifications are compatible.
- To reduce the risk of electric shock, disconnect all AC or DC power cord and PS cables to completely remove power from the unit.
- Before importing / exporting a configuration make sure the firmware version is the same.
- After a firmware upgrade, the switch will automatically set the configuration to the latest version.

Notices: Not Designed for Use in Life Support Equipment or Applications: These products are not designed for use in life support equipment or applications that would cause a life-threatening situation if any such product failed. Do not use this product in these types of equipment or applications.

ERN # : ERN # (Encryption Registration Number) R111839 (self-declaring).

Features

- DMS (Device Management System) embedded
- Support Jumbo Frame up to 10200 bytes
- Authentication – RADIUS, TACACS+
- IEEE 802.1X: RADIUS authentication, authorization and accounting, MD5 hash, guest VLAN, single/multiple host mode and single/multiple sessions
- DHCP Relay, DHCP Option 82, DHCP Snooping, DHCP Server, DHCP Per Port
- L2/L3/L4 ACLs support MAC, VLAN ID or IP, protocol, port, DSCP/IP precedence/TCP.UDP, Ether Type, ICMP, TCP flag
- LLDP (Link Layer Discovery Protocol)
- IP Source Guard, Port Security
- Port Mirroring
- Firmware Update via TFTP/HTTP and console
- Syslog
- 1RU high, compact form factor
- Extended operating temperature: -20°C to + 60°C
- Rapid Ring and Spanning Tree (STP, MST, and RSTP)

Benefits

- F**eature-rich Ethernet Switch for Enterprise-class**: The switch delivers advanced functionality in L2+ managed switch including Layer 3 static route, DHCP server, IPv6 support, LLDP, etc. It also has comprehensive security features such as IP source guard and Access Control List to guard your network from unauthorized access. It builds on the market-leading price/performance with L2+ Managed GbE fiber switch, and provide secure, reliable and ease of use for enterprise and SMB deployments.
- E**asy to Install, Configure and Troubleshoot by DMS**: The DMS (Device Management System) provides embedded functions to facilitate device management anytime and anywhere. Its user-friendly interface helps you manage devices intuitively. It supports various IP device types (e.g. IP phone, IP camera, WAP) to enhance manageability and save time/cost during installation/maintenance stages.
- **Lower Total Cost of Ownership (TCO) with Energy-efficient Design**: It is designed to help customers to reduce power consumption and lower the TCO by Energy Efficient Ethernet (IEEE 802.3az) features. It can be used to build a green Ethernet networking environment.
- **AC/DC Dual Power Supply**: Power failover when power supplies are connected to different circuits to help reduce network operating risk.

Ordering Information

SKU	Description
SM12DP2XA	(12) 100/1000Base-X SFP slots + (2) 1G/10GBase-X SFP+ slots + (2) 10/100/1000Base-T RJ-45 ports (includes 19” rack mount brackets)
Optional Accessories (sold separately)	
25130	Power Supply; Input: 88 -264VDC, 120-370VDC; Output: 48VDC, 39.8 Watts, -20°C to +70°C
SFP Modules	See Transition Networks SFP webpage or the SFP+ webpage.

Specifications

Port Configuration

Total Ports	SFP (100M/1G)	Uplinks (100M/1G/10G)	Console
16	12	2 SFP+ (1G/10G) 2 RJ45 (100M/1G)	RJ45

Hardware Performance

Forwarding Capacity	Switching Capacity	Backplane	Mac Table	Jumbo Frames
50.592 Mpps	68 Gbps	68 Gbps	32756	10200 Bytes

Environmental Range

Operating Temperature		Storage Temperature		Altitude	
Fahrenheit	Centigrade	Fahrenheit	Centigrade	Feet	Meters
-4° to +140°	-20° to+ 60°	-4° to +158°	-20° to +70°	< 10000	< 3000

Dimensions, Weights, Humidity

Dimensions (WxHxD)		Weight		Operating Humidity
Millimeter	Inches	Kilograms	Pounds	
280 x 44 x 134	11 x 1.73 x 5.28	1.0	2.2	10% to 90% non-condensing

Voltage and Frequency

Model Name	AC Input Voltage	DC Input Voltage	Power Consumption
SM12DP2XA	100-240 VAC, 50-60 Hz	24-48 VDC	24 Watts (max)

Certifications

Electromagnetic Emissions (EMC) and Safety
FCC Class A, CE Safety: UL Listed; IEC62368-1/EN62368-1

MTBF

Model	MTBF	Environment
SM12DP2XA	270, 787 Hrs.	GB, GC - Ground Benign, Controlled. Temp: 25.00 deg. C.
SM12DP2XA	58,838 Hrs.	GB, GC - Ground Benign, Controlled. Temp: 75.00 deg. C.

Software Features

Layer 2 Switching	
Spanning Tree Protocol (STP)	● Standard Spanning Tree 802.1d ● Rapid Spanning Tree (RSTP) 802.1w ● Multiple Spanning Tree (MSTP) 802.1s
Trunking	Link Aggregation Control Protocol (LACP) IEEE 802.3ad ● Up to 8 groups ● Up to 8 ports per group
VLAN	Supports up to 4K VLANs simultaneously (out of 4096 VLAN IDs) ● Port-based VLAN ● 802.1Q tag-based VLAN ● MAC-based VLAN ● Management VLAN ● Private VLAN Edge (PVE) ● Q-in-Q (double tag) VLAN ● Voice VLAN ● GARP VLAN Registration Protocol (GVRP)
DHCP Relay	● Relay of DHCP traffic to DHCP server in different VLAN. ● 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 in order to reduce load on the multicast router
MLD v1/v2 Snooping	Delivers IPv6 multicast packets only to the required receivers
Device Management System (DMS)	
DMS	Topology View, Floor View, Map View, Dashboard, Traffic Monitoring, Cable Diagnostics, Google Map API Key
Graphical Monitoring	● Topology view: Support intuitive way to configure and manage switches and devices with visual relations ● Floor view: It's easy to drag and drop devices and to help build smart workforces ● Map view: Enhance efficiency to drag and drop devices and monitor surroundings on Google Maps
Find my Switch	Search your real switches quickly and manage directly.
Traffic Monitoring	Display visual chart of network traffic of all devices and monitor every port at any time from switches
Troubleshooting	● Network diagnostic between master switch and devices ● Support protection mechanism, such as rate-limiting to protect your devices from brute-force downloading

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	● IEEE802.1X: RADIUS authentication, authorization and accounting, MD5 hash, guest VLAN, single/multiple host mode and single/multiple sessions ● Supports IGMP-RADIUS based 802.1X ● Dynamic VLAN assignment
Layer 2 Isolation (Private VLAN Edge)	PVE (aka "protected ports") provides L2 isolation between clients in the same VLAN. Supports multiple uplinks. Layer 2 Isolation prevents communication between wired and wireless clients in the network. It prevents any wireless or wired subscriber from being able to communicate to each other even when they are within the same subnet, making it a good solution for hotspot security.
Port Security	Locks MAC addresses to ports, and limits the number of learned MAC address
IP Source Guard	Prevents illegal IP address from accessing to specific port in the switch
RADIUS/ TACACS+	Supports RADIUS and TACACS+ authentication (switch 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	A feature acts as a firewall between untrusted hosts and trusted DHCP servers
DHCP per Port	The switch's DHCP server assigns IP addresses. Clients get IP addresses in sequence and the switch assigns IP addresses on a per-port basis from the configured IP range.
ACLs	L2/L3/L4. IPv6 support. Up to 512 entries. Drop or rate limitation based on: ● Source and destination MAC, VLAN ID or IP address, protocol, port, ● Differentiated services code point (DSCP) / IP precedence ● TCP/ UDP source and destination ports ● 802.1p priority ● Ethernet type ● Internet Control Message Protocol (ICMP) packets ● TCP flag
Quality of Service (QoS)	
Hardware Queue	Supports 8 hardware queues
Scheduling	● Strict priority and weighted round-robin (WRR) ● Queue assignment based on DSCP and class of service
Classification	● Port based ● 802.1p VLAN priority based ● IPv4/IPv6 precedence / DSCP based ● Differentiated Services (DiffServ) ● Classification and re-marking ACLs
Rate Limiting	● Ingress policer

	● Egress shaping and rate control ● Per port

Management	
DHCP Server	Support DHCP server to assign IP to DHCP clients
Zero Touch Upgrade	Upgrade single switch automatically when you get notification
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 (N is Switch's Ports) ports can be mirrored to single destination port. A single session is supported.
UPnP	UPnP was promoted by the UPnP Forum to enable simple robust connectivity to stand-alone devices and PCs from over 800 vendors of consumer electronics, network computing, etc. UPnP has been managed by the Open Connectivity Foundation (OCF) since 2016.
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 ● Supports LLDP-MED extensions (IEEE 802.1AB)
Web GUI Interface	Built-in switch configuration utility for browser-based device configuration, monitoring, diagnostics and maintenance
CLI	Lets you configure/manage switches 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 ● Upgrade through console port
NTP	Network Time Protocol (NTP) is a networking protocol for clock synchronization between computer systems over packet-switched
Other Management	● HTTP/HTTPs; SSH ● DHCP Client/ DHCPv6 Client ● Cable Diagnostics ● Ping ● Syslog ● Telnet Client ● IPv6 Management
Switching Bandwidth	68 Gbps
MAC Addresses Table	32756 MAC Addresses

Event/Error Log	Syslog, SMTP (RFC821)
Management Access Filtering	SNMP, Web, Telnet, SSH
CDP Aware	Yes (Cisco Discovery Protocol)
Edge Port BPDU Filtering	Control whether a port explicitly configured as Edge will transmit and receive BPDUs.
Edge Port BPDU Guard	Control whether a port explicitly configured as Edge will disable itself upon reception of a BPDU. The port will enter the error-disabled state and will be removed from the active topology.

Switch Architecture

The switch incorporates a wire-speed, non-blocking switching fabric. This allows wire-speed transport of multiple packets at low latency on all ports simultaneously. The switch also features full-duplex capability on all ports, which effectively doubles the bandwidth of each connection. This switch uses store-and-forward technology to ensure maximum data integrity. With this technology, the entire packet must be received into a buffer and checked for validity before being forwarded. This prevents errors from being propagated throughout the network.

Network Management Options

The switch can also be managed over the network with a web browser or Telnet application. The switch includes a built-in network management agent that allows it to be managed in-band using SNMP or RMON (Groups 1, 2, 3, 9) protocols. See the *Web User Guide* for a detailed description of the management features.

About This Manual

This manual describes how to install, configure, and troubleshoot the SM12DP2XA switch, including how to:

- Install the switch.
- Check switch status by reading the LEDs.
- Reset the switch or restore the switch to factory defaults.
- Troubleshoot switch installation.

This manual is intended for use by network administrators who are responsible for operating and maintaining network equipment; consequently, it assumes a basic working knowledge of general switch functions, the Internet Protocol (IP), and Simple Network Management Protocol (SNMP).

These conventions are used throughout this guide to show information:

 **Note**: Emphasizes important information or calls your attention to related features or instructions.

 **Warning**: Alerts you to a potential hazard that could cause personal injury.

 **Caution**: Alerts you to a potential hazard that could cause loss of data or damage to the system or equipment.

Related Manuals

SM12DP2XA Quick Start Guide, 33750
SM12DP2XA Install Guide, 33751 (this manual)
SM12DP2XA Web User Guide, 33752
SM12DP2XA CLI Reference, 33753
Release Notes (version specific)

For More Information

A printed *Quick Start Guide* is shipped with each unit.

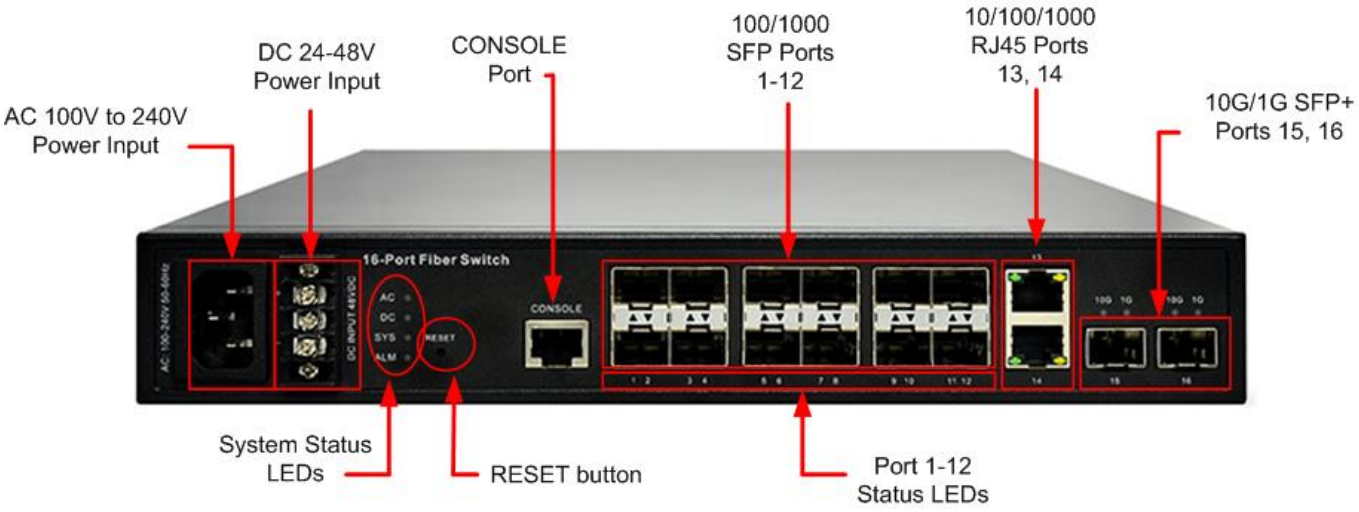
For Transition Networks Drivers, Firmware, etc. go to the Product Support webpage (logon required).
For Transition Networks Manuals, Brochures, Data Sheets, etc. go to the Support Library (no logon required).

For SFP information see Transition Networks SFP webpage.
For SFP+ information see Transition Networks SFP+ webpage.

Note: Information in this document is subject to change without notice. Note that this manual provides links to third party web sites for which Transition Networks is not responsible.

Front Panel

The switch front panel contains the power inputs, ports, LEDs and RESET button as shown and described below.



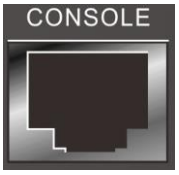
1000BASE-T Ports

The switch contains 10/100/1000BASE-T RJ-45 ports. All RJ-45 ports support automatic MDI/MDI-X operation, auto-negotiation and IEEE 802.3x auto-negotiation of flow control, so the optimum data rate and transmission can be selected automatically.

SFP and SFP+ Transceiver Slots

The switch supports Small Form Factor Pluggable (SFP) transceiver slots port 1 to port 12, and port 15 to port 16 are 10G SFP+. In the default configuration, if an SFP transceiver (purchased separately) is installed in a slot and has a valid link on the port, the associated RJ-45 port is disabled.

CONSOLE Port



The switch has one RJ-45 CONSOLE port for CLI access via the provided RS232 DB9 to RJ45 Cable. **Note** that Cross-over cabling to the CONSOLE port is not supported.

Front Panel LEDs

The switch includes a LED panel for system and port indications that simplify installation and network troubleshooting. The LEDs are located on left side of the front panel for easy viewing. The LEDs are shown and described in the tables below.

Port Status LEDs

LED (Color)	View	Status
P1-P12 SFP Link/Act/Speed (Green/ Amber)		Lights when Fiber connection with remote device is good. Blinks when any traffic is present. The LED is green when linking up 1Gbps. The LED is Amber when linking up 100Mbps.
P13-P14 TP Link/Act/Speed (Green/ Amber)		Blinks when any traffic is present. The LED is green when linking up 1Gbps. The LED is Amber when linking up 10/100Mbps.
P15-P16 **1G** SFP **10G** SFP+ Link/Act/Speed		Blinks when any traffic is present. The green 10G LED is lit when linked at 10Gbps. The green 1G LED is lit when linked at 1Gbps.

System Status LEDs

LED (Color)	View	Status
AC PWR (Green)		Lights when AC power is on.
DC PWR (Green)		Lights when DC power is on.
SYS System (Green)		Blinks when system is booting; Lit when system is coming up.
ALM Alarm (Red)		Usually off; lights when a system error condition exists.

RST (Reset) Button

The front panel RST (Reset) button is recessed for access using a paper clip or something similar. Press and hold the RST (Reset) button for 2-7 seconds to reset or 7-12 seconds to restore to factory defaults; the LEDs blink and the fan speeds up momentarily.

Press the Reset button momentarily to perform these tasks:

- **Reset the Switch:** to reboot and get the switch back to the previous configuration settings saved.
- **Restore the Switch to Factory Defaults:** to restore the original factory default settings back to the switch.

Note: Based on the table below, you can tell which task is being performed by reading the LED behaviors while pressing the **RST** (Reset) button. Once the LED behaviors are correctly displayed, just release the button.

Task	Press RST button for	SYS LED Behavior	Port Status LED Behavior
Reset the Switch	2 ~ 7 seconds	Blinking Green	All LEDs OFF
Restore to Defaults	8 ~ 12 seconds	Blinking Green	All LEDs Stay ON

Power Supply Inputs

The SM12DP2XA front panel has two front panel power inputs for power redundancy; the switch has a 100~240 VAC power socket for AC power Input and a 24/48VDC power input via the terminal block. Connecting to both AC and DC power provides redundancy (AC with priority).

For DC Power Supply info see https://www.transition.com/products/accessory/25130a/.

An AC Power Cord is included. To order the corresponding country-specific power cord, add the extension from to the end of the SKU. For example, SM24TBT2DPA-NA = North America, -LA = Latin America, -EU = Europe, -UK = United Kingdom, -SA = South Africa, -JP = Japan, -OZ = Australia, -BR = Brazil.

See Connecting to Power on page 24.

Installation

Site Selection

The Switch can be mounted in a standard 19-inch equipment rack (Via Rack mount Kit). Be sure to follow the guidelines below when choosing a location. The site should:

- Be at the center of all the devices you want to link and near a power outlet.
- Be able to maintain its temperature within -20 to +60°C and its humidity within 5% to 95%, non-condensing.
- Be accessible for installing, cabling and maintaining the devices.
- Allow the status LEDs to be clearly visible.

Make sure the twisted-pair Ethernet cable is always routed away from power lines, radios, transmitters or any other electrical interference.

Make sure that the Switch is connected to a separate grounded power outlet.

Unpacking

1. Carefully unpack all SM12DP2XA contents.
2. Verify receipt of all SM12DP2XA components. Contact your sales representative if any items are missing.
3. Place the SM12DP2XA and related materials near the install location.
4. Save the SM12DP2XA shipping carton and packing materials for possible future use.

Unpacking

Package Contents

After unpacking the switch, please check the contents to be sure you have received all the components. Before beginning the installation, be sure you have all other necessary installation equipment.

- One SM12DP2XA GbE Fiber Managed Switch
- Four adhesive rubber feet
- Mounting Accessory (for 19" Rack Shelf)
- One printed Quick Start Guide
- One AC Power Cord
- One RS232 DB9 to RJ45 Cable

Notify your sales representative immediately if any of the above items is missing or damaged.

Mounting

The switch can be mounted in a standard 19-inch equipment rack or on a desktop or shelf as follows.

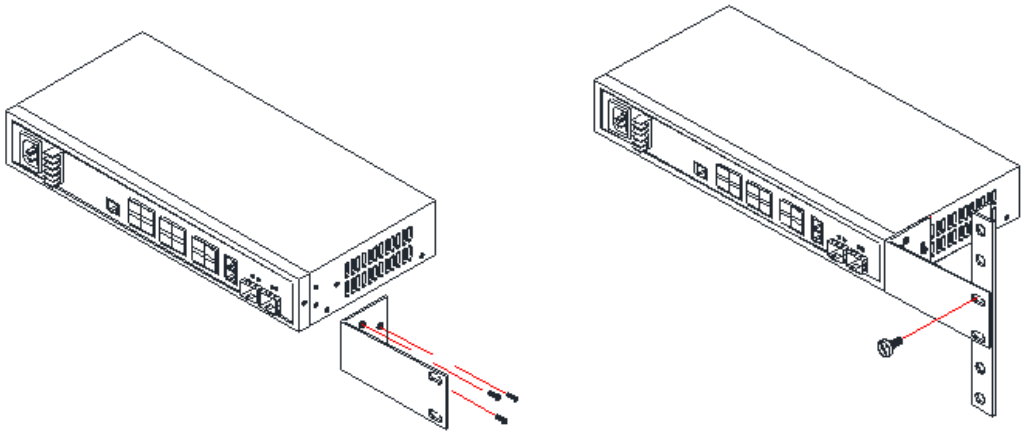
Rack Mounting

Before rack mounting the switch, verify these factors:

- Temperature: Since the temperature within a rack assembly may be higher than the ambient room temperature, check that the rack-environment temperature is within the specified operating temperature range (-20° to +60°C).
- Mechanical Loading: Do not place any equipment on top of a rack-mounted unit.
- Circuit Overloading: Be sure that the supply circuit to the rack assembly is not overloaded.
- Grounding: Rack-mounted equipment should be properly grounded.

To Rack-mount Devices: (Optional)

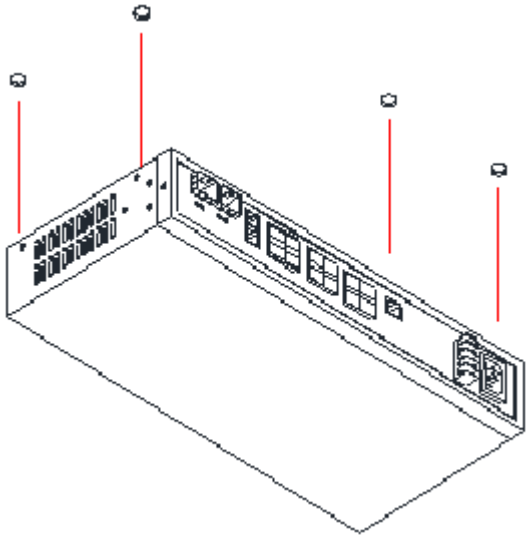
1. Attach the brackets to the device using the screws provided in the Mounting Accessory.



2. Mount the device in the rack (via Rack-Mount kit), using four rack-mounting screws (not provided). Be sure to secure the lower rack-mounting screws first to prevent the brackets being bent by the weight of the switch.
3. If installing a single switch only, turn to "Connection to a Power Source" at the end of this chapter.
4. If installing multiple switches, mount them in the rack, one below the other, in any order.

Desktop or Shelf Mounting

1. Attach the four adhesive rubber feet to the bottom of the first switch.



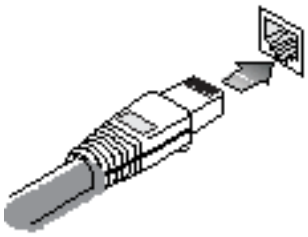
2. Set the device on a flat surface near an AC power source, making sure there are at least two inches of space on all sides for proper air flow.
3. If installing a single switch only, go to “Connecting to a Power Source” at the end of this Chapter.
4. If installing multiple switches, attach four adhesive feet to each one. Place each device squarely on top of the one below, in any order.

Ethernet Cabling

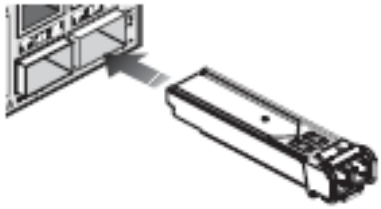
To ensure proper operation when installing the switch into a network, make sure that the current cables are suitable for your operating environment. Check the following criteria against the current installation of your network:

- Protection from radio frequency interference emissions.
- Electrical surge suppression.
- Separation of electrical wires and data based network wiring.
- Safe connections with no damaged cables, connectors or shields.

WARNING: The mini-GBICs are Class 1 laser devices. Avoid direct eye exposure to the beam coming from the transmit port.



RJ-45 Connections



SFP Transceiver

For **fiber optic** connections, you may use 50/125 or 62.5/125 micron multimode fiber or 9/125 micron single-mode fiber.

For **copper** connections, you may use unshielded twisted-pair (UTP) for RJ-45 connections. For 1G bps connections use Category 5, 5e, 6, or 6A. For 10G bps connections see the table below.

The IEEE 802.3an-2006, Table 55-12, Cabling Types and Distances provides distance descriptions as follows:

Cabling Category	Max Link Segment Distance	Cabling reference(s)
Class E / Category 6	55 m to 100 m*	ISO/IEC TR-24750 / TIA/EIA TSB-155
Class E / Category 6: unscreened	55 m	ISO/IEC TR-24750 / TIA/EIA TSB-155
Class E / Category 6: screened	100 m	ISO/IEC TR-24750 / TIA/EIA TSB-155
Class F / (Category 7)	100 m	ISO/IEC TR-24750
Class EA / Category 6A	100 m	ISO/IEC 11801 Ed 2.1 / TIA/EIA-568-B.2-10

For more information see https://www.bicsi.org/double.aspx?l=3382.

Installing an Optional SFP Transceiver

You can install or remove a mini-GBIC SFP from a mini-GBIC slot without having to power off the switch. Refer to the SFP manual for important cautions and warnings. See the Fiber Optics Association (FOA) safety webpage.

An optional Gigabit SFP transceiver can be used for a backbone connection between switches, or for connecting to a high-speed server. Each single-mode fiber port requires 9/125 micron single-mode fiber optic cable with an LC connector at both ends. Each multimode fiber optic port requires 50/125 or 62.5/125 micron multimode fiber optic cabling with an LC connector at both ends. Make sure the fiber connectors are clean; see the FOA.org termination cleaning webpage.

 WARNING: This switch uses lasers to transmit signals over fiber optic cable. The lasers are inherently eye safe in normal operation. However, never look directly at a transmit port when it is powered on.

 WARNING: When selecting a fiber SFP device, considering safety; make sure that it can function at a temperature that is not less than the recommended maximum operational temperature of the product. You must also use an approved Laser SFP transceiver.

 **NOTE**:

- The mini-GBIC slots are shared with the four 10/ 100/ 1000Base-T RJ-45 ports. If a mini-GBIC is installed in a slot, the associated RJ-45 port is disabled and cannot be used
- The mini-GBIC ports operate only at full duplex. Half duplex operation is not supported.
- Ensure the network cable is NOT connected when you install or remove a mini-GBIC.

 **NOTE**: SFP transceivers are not provided in the switch package. See the Transition Networks Optical Devices webpage.

Connectivity Rules

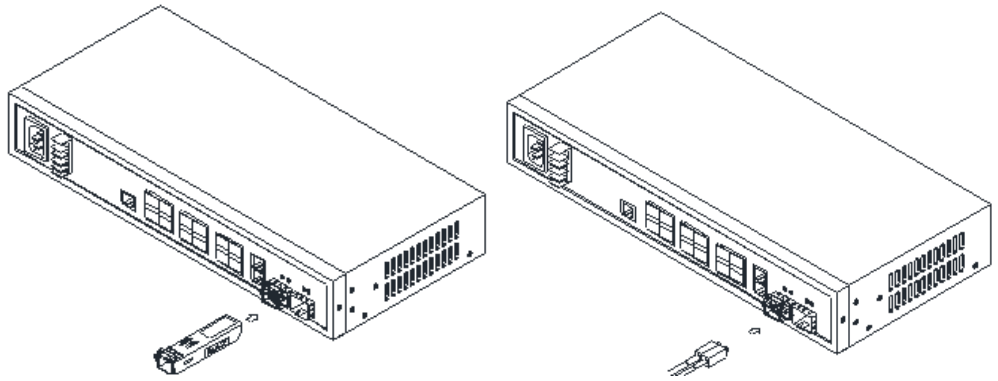
When adding hubs to your network, note that because switches break up the path for connected devices into separate collision domains, you should not include the switch or connected cabling in your calculations for cascade length involving other devices.

- Position the cables carefully, so that they do not put strain on the connectors.
- Organize the cables in bundles so that cables do not intertwine.
- Inspect the cables to make sure that the routing and bend radiuses are satisfactory. Reposition the cables, if necessary.
- Install cable ties in accordance with your site requirements.

Note: Cross-over cabling to the CONSOLE port is not supported.

To Install an SFP transceiver

1. Consider network and cabling requirements to select an appropriate SFP transceiver type.
2. Remove and keep the LC port's rubber plug. When not connected to a fiber cable, the rubber plug should be replaced to protect the optics.
3. Make sure the fiber connectors are clean; see http://foa.org/tech/ref/termination/cleaning.html.
   Dirty fiber terminators on fiber optic cables will impair the quality of the light transmitted through the cable and lead to degraded performance on the port.
4. Insert the transceiver with the optical connector facing outward and the slot connector facing down. Note that SFP transceivers are keyed so they can only be installed in one orientation.
5. Slide the SFP transceiver into the slot until it clicks into place.
6. Connect one end of the cable to the LC port on the switch and the other end to the LC port on the other device. Since LC connectors are keyed, the cable can be attached in only one orientation.



7. As a connection is made, check the Link LED on the switch corresponding to the port to be sure that the connection is valid.

The fiber optic ports operate at 1 Gbps. The maximum length for fiber optic cable operating at Gigabit speed will depend on the fiber type. You need an attenuator if the lengths will be less than half the maximum range of your particular optics; see the FOA.org attenuators webpage

Connecting to Power

The AC/DC Dual Power Supply can provide power failover when power supplies are connected to different circuits to help reduce network operating risk. With fiber and copper cabling completed, and **AC** and/or **DC** power applied, the port LEDs light, the **SYS** LED flashes, the **AC** and/or **DC** LEDs light and the **SYS** LED goes from flashing to steadily lit. **Note**: see the Cautions and Warnings on page 3.

Connecting to an AC Power Source

You can plug or remove the AC power cord through the AC socket from the AC power source.

1. Insert the AC power cord directly into the AC socket located at the front of the switch.
2. Plug the other end of the power cord into a 100-240 VAC (50-60Hz) power source.
3. Check the front-panel LEDs as the device is powered on to be sure the **AC** LED is lit. If not, check that the power cable is correctly plugged in and that the AC outlet is live.

Connecting to a DC Power Source

You can plug or remove wires at the terminal block from an external 24/48VDC source.

1. Remove the DC Input cover.
2. Note the **+** and **–** polarity marked, and then connect the wires directly to the switch front panel 24/48VDC terminal block.
3. Connect the other end of the wires into an external 24/48VDC power source.
4. Connect one end of the grounding wire to the terminal block and connect the other end to the ground source.
5. Check the front-panel LEDs as the device is powered on to be sure the **DC** LED is lit. If not, check that the power is cabled correctly, and the power source is live.

Connecting to Both AC and DC Power

The AC and DC work individually, so there is no priority order for connecting either AC or DC first. If connecting to both AC and DC power, both can be redundant (AC has priority when both AC and DC power are applied).

1. With the DC power source power OFF, connect **+** or **–** or ground wire in any order.
2. With the DC power source power ON, connect ground wire first, then make the **–** connection, and then make the **+** connection.

25130 Industrial DIN Rail Mounted Power Supply

Features

- Variable AC input range
- Protected against Overload and Over Voltage
- Convection air cooling
- DIN rail mountable
- UL 508 approved
- Full load burn in test
- RoHS Compliant

Specifications

Output

Output Voltage 48VDC
Current Rating 0.83A
Power Rating 39.8 Watts
Ripple & Noise Max 200mVp-p
Voltage Range 48~56VDC
Voltage Tolerance ±1.0%
Line Regulation ±1.0%
Load Regulation ±1.0%
Setup, Rise Time 500ms, 30ms
Hold Up Time 20ms/115VAC

Input

Voltage Range Switch Selectable: 88~264VAC, 120~370VDC
Frequency Range 47~63Hz
Efficiency 88%
AC Current (Typical) 1.1A@115VAC, 0.7A@230VAC
Inrush Current (Cold) 30A@115VAC, 60A@230VAC
Leakage Current <1mA@240VAC

Protection: Overload 105~150%; Overvoltage 57.6~64.8V

Dimensions: Width: 1.57” [40 mm] x Depth: 3.94” [100 mm] x Height: 3.54” [90 mm]

Environment Operating Temp.: -20°C to +70°C; Storage.: -40°C to +85°C. Humidity: 20% to 90% (non-condensing)

Weight 0.66 lbs. [0.3 kg]

MTBF 301.7Khrs

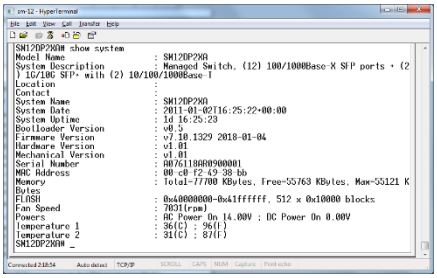
Certifications Safety: UL508, TUV EN60950-1, NEC Class 2, LPS Compliant, UL60950-1, EN55011, EN55022, CISPR22, EN61204-3 Class B, EN61000-3-2, EN61000-3-3, EN61000-4-2, EN61000-4-3, EN61000-4-4, EN61000-4-5, EN61000-4-6, EN61000-4-8, EN61000-4-11, EN55024, EN61000-6-2, EN50082-2, EN61204-3 A, IEC60068-2-6 (Vibration)

Warranty Lifetime

Initial Switch Configuration

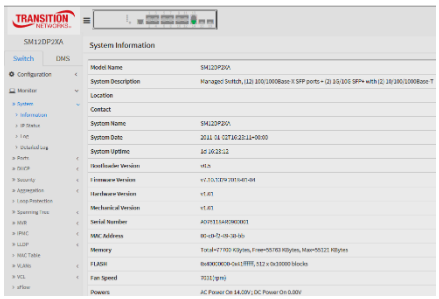
Initial switch configuration can be via CLI or web browser. The factory defaults are IP Address: **192.168.1.77**, User Name: **admin**, and Password: **admin**.

CLI Configuration



The command-line interface (CLI) is a text-based interface that you can access the CLI through either a direct serial connection to the device or a Telnet session. An-RJ-45 cable is used for connecting a terminal or terminal emulator to the SM12DP2XA RJ-45 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. See the *CLI Reference* for initial switch configuration via CLI.

Web UI Configuration



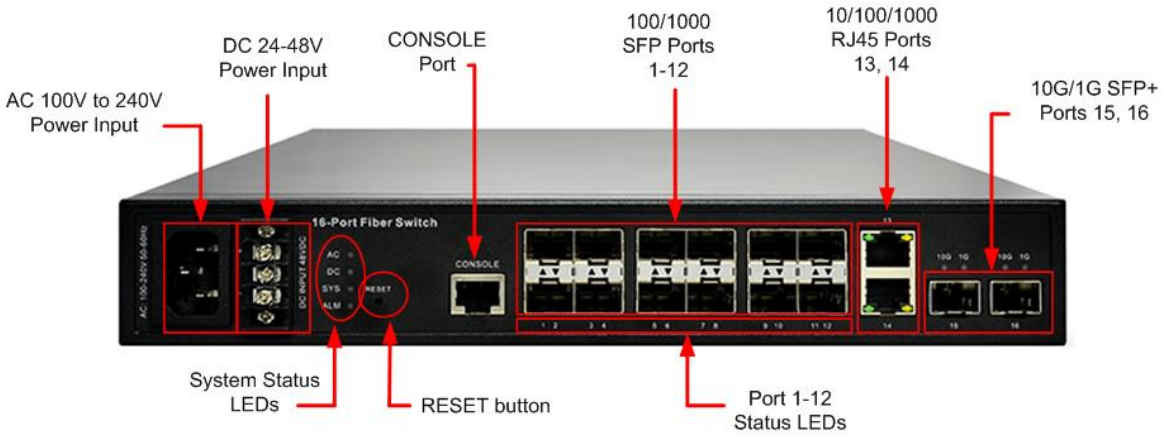
The left-hand menu contains two main tabs (Switch and DMS) each with several sub-tabs for configuring and monitoring the switch's major functions. The major Switch tab functions include System, Ports, DHCP, Security, Aggregation, Spanning Tree, VLAN, QoS, Diagnostics, and Maintenance. The DMS (Device Management System) functions are DMS Mode, Graphical Monitoring, Management, and Maintenance. See the *Web User Guide* for initial switch configuration via web browser.

Troubleshooting, Warranty, Support and Compliance

General Troubleshooting

Most problems are caused by the following situations. Check for these items first when starting troubleshooting:

1. Make sure your switch model supports the feature or function attempted; see Features on page 7.
2. Verify the install process; see Installation on page 17.
3. Troubleshoot connected network devices to pinpoint the problem to the switch.
4. Connecting to devices that have a fixed full- duplex configuration. Make sure all devices connected to the Switch devices are configured to auto negotiate or are configured to connect at half duplex.
5. Faulty or loose cables. Look for loose or obviously faulty connections. If they appear to be OK, make sure the connections are snug. If that does not correct the problem, try a different cable.
6. Check cables. Non-standard and miswired cables may cause network collisions and other network problems and can seriously impair network performance. Use a new correctly-wired cable. A cable tester is a recommended tool for every Ethernet network installation.
7. Check Network Topology to make sure you have a valid network topology. If you no longer experience the problems, the new topology is probably at fault. Also, make sure your network topology contains no data path loops.
8. Check port configurations. A port on your Switch may not be operating as you expect because it has been put into a “blocking” state by Spanning Tree, GVRP (automatic VLANs), or LACP (automatic trunking). Note that the normal operation of the Spanning Tree, GVRP, and LACP features may put the port in a blocking state. Make sure the port was not configured as disabled via software.
9. SYS LED is Off. Check connections between the switch, the power cord and the wall outlet and/or verify DC power supply operation. See LED Troubleshooting below.
10. Link LED is Off. Verify that the switch and attached device are powered on. Be sure the cable is plugged into the switch and corresponding device. If the switch is installed in a rack, check the connections to the punch-down block and patch panel. Verify that the proper cable type is used and its length does not exceed specified limits. Check the adapter on the attached device and cable connections for possible defects. Replace the defective adapter or cable if necessary.
11. Contact Transition Networks Tech Support for assistance. See Contact Us below.



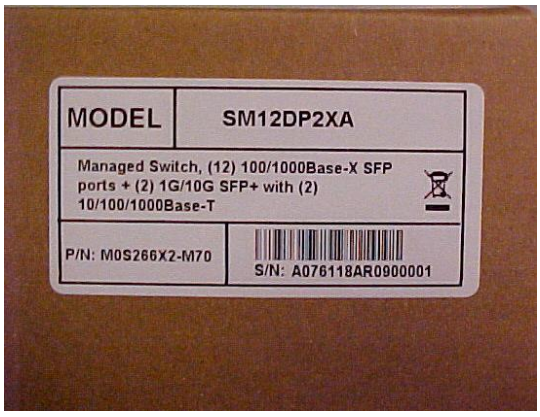
LED Troubleshooting

The LED behavior is summarized below.

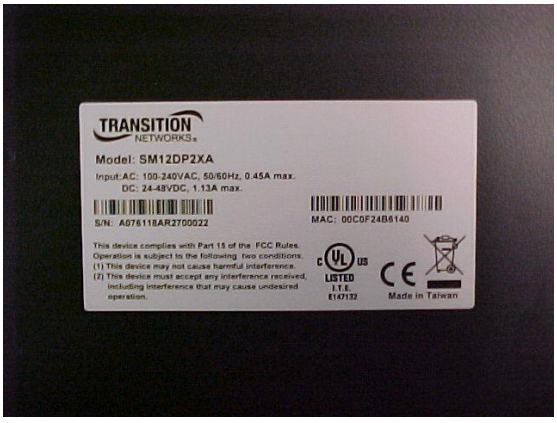
	LED	Color	Function
Global	POWER/Alarm	Green/Red	Lit Green when Power A on Switch is Ready. Lit Red when FAN, Temperature or Voltage Detected Fault Blinks when POST Running
	Link/Act/Speed	Green	Lit Green when select to Link/Act/Speed mode.
SFP Ports 1-12	Link/Act/Speed	Green/ Amber	Light off: port disconnected or link failed. Green Light on: 1GLink Present, No Activity. Amber Light on: 100M Link Present, No Activity. Green Blinking : 1GActivity. Port is sending or receiving data. Amber Blinking : 100M Activity. Port is sending or receiving data.
RJ45 Ports 13-14	Link/Act/,Speed	Green/ Amber	LNK: Amber/Green (Two Color) Light off: port disconnected or link failed Amber Light on: link-up (100M/10M) Green Light on: link-up (1G) Blinking: activity (receiving or transmitting data)
SFP Port 15-16	Link/Act/Speed	Green/ Amber	Light off: port disconnected or link failed. Green Light on: 10GLink Present, No Activity. Amber Light on: 1G Link Present, No Activity. Green Blinking : 10GActivity. Port is sending or receiving data. Amber Blinking : 1G Activity. Port is sending or receiving data.

Device Label and Packaging Label

You can find device information on the box label (left) and device label (right).



Box Label



Device Label

Recording Device and System Information

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

1. Select the SM12DP2XA **Configuration** > **System** > **Information** menu path. From the CLI, use the **show** commands needed to gather the information below or as requested by the TN Support Specialist.
2. Record Model Name: _____ Power Source: _____
   Hardware Version: _____ Mechanical Version: _____
   Firmware Version: _____System Date: _____
3. Record the **LED** Status: _____
   _____
4. Provide additional information to your Tech Support Specialist. See the "Troubleshooting" section above.

Your Transition Networks 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 Transition Networks products in the network: _____
_____
_____

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

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

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

Any previous Return Material Authorization (RMA) numbers: _____

Limited Lifetime Warranty

To return a defective product for warranty coverage, contact Transition Networks' technical support department for a return authorization number.

Contact Us

Technical Support

Technical support is available 24-hours a day

US and Canada: 1-800-260-1312

International: 00-1-952-941-7600

Main Office

tel: +1.952.941.7600 | toll free: 1.800.526.9267 | fax: 952.941.2322

sales@transition.com | techsupport@transition.com | customerservice@transition.com

Address

Transition Networks
10900 Red Circle Drive
Minnetonka, MN 55343, U.S.A.

Firmware: Keep your products up to date by downloading the latest firmware. You must log in or create an account to download firmware. For further assistance contact us at +1.952.358.3601, 1.800.260.1312, or at techsupport@transition.com.

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.

You are cautioned that changes or modifications not expressly approved by the party responsible for compliance could void your authority to operate the equipment.

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.

Declaration of Conformity (DoC)

Declaration of Conformity

Manufacture's Name: Transition Networks, Inc.

Manufacture's Address: 10900 Red Circle Drive, Minnetonka, Minnesota 55343 U.S.A.

Declares that the product(s): **SM12DP2XA**

Conforms to the following Product Regulations:

EN 55032: 2015 +AC:2016, Class A; CISPR 32:2015 +Cor 1:2016, Class A; AS/NZ CISPR 32:2015, Class A; EN 61000-3-2:2014, EN 61000-3-3:2013, EN 55024:2010, EN 61000-4-2:2009 / IEC 61000-4-2:2008 ED. 2.0 EN 61000-4-3:2006 + A1:2008 + A2:2010 / IEC 61000-4-3:2010 ED 3.2; EN 61000-4-4:2012 / IEC 61000-4-4:2012 ED 3.0, EN 61000-4-5:2014 / IEC 61000-4-5:2014 ED 3.0; EN 61000-4-6:2014 / IEC 61000-4-6:2013 ED 4.0, EN 61000-4-8:2010 / IEC 61000-4-8:2009 ED 2.0; EN 61000-4-11:2004 / IEC 61000-4-11:2004 ED 2.0 IEC 62368-1:2014 (Second Edition); and/or EN 62368-1:2014/A11:2017; and/or BS EN 62368-12014+A11:2017. 47 CFR FCC Part 15,Subpart B, Class A; ICES-003:2016 Issue 6, Class A; ASNI C63.4:2014

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 Standard(s).

Place: Minnetonka, Minnesota Date: July 28,2021 Signature: *Stephen Anderson*

Full Name: Stephen Anderson Position: Vice President of Engineering

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"). Transition Networks and its supplier(s) specifically disclaim any expressed or implied warranty of fitness for such High Risk Activities.

Notices : The information in this manual is subject to change. For the most current information refer to the online manual at https://www.transition.com.

Product is certified by the manufacturer to comply with DHHS Rule 21/CFR, Subchapter J applicable at the date of manufacture.

Notices: Not Designed for Use in Life Support Equipment or Applications: These products are not designed for use in life support equipment or applications that would cause a life-threatening situation if any such product failed. Do not use this product in these types of equipment or applications.

ERN # : ERN # (Encryption Registration Number) R111839 (self-declaring).

IMPORTANT Copper based media ports: e.g., Twisted Pair (TP) Ethernet, USB, RS-232, RS422, RS485, DS1, DS3, Video Coax, etc., are intended to be connected to intra-building (inside plant) link segments that are not subject to lightening transients or power faults. Copper based media ports: e.g., Twisted Pair (TP) Ethernet, USB, RS-232, RS-422, RS-485, DS1, DS3, Video Coax, etc., are NOT to be connected to inter-building (outside plant) link segments that are subject to lightening transients or power faults. Failure to observe this caution could result in damage to equipment.

Warning: Visible and invisible laser radiation when open: Do not stare into the beam or view the beam directly with optical instruments. Failure to observe this warning could result in an eye injury or blindness.

WARNING: Use of controls, adjustments or the performance of procedures other than those specified herein may result in hazardous radiation exposure.

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.

Transition Networks
10900 Red Circle Drive
Minnetonka, MN 55343, U.S.A.
tel: +1.952.941.7600 | toll free: 1.800.526.9267 | fax: 952.941.2322
sales@transition.com | techsupport@transition.com | customerservice@transition.com

SM12DP2XA Install Guide, 33751 Rev. F