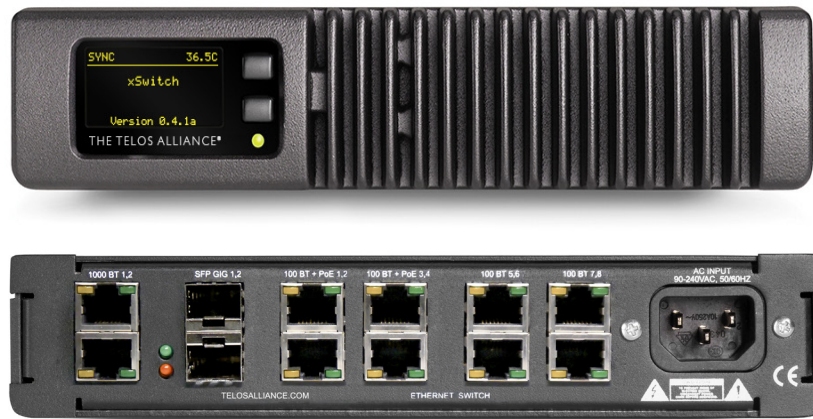# Telos Alliance® xSwitch
The Network Switch Built for IP-Audio

OVERVIEW

xSwitch is the world's only zero-configuration Ethernet switch optimized for Livewire® IP-Audio applications. Fast setup requires only IP address assignment via front-panel OLED display or Axia® iProbe software. Features 8 10/100MBit Ethernet ports — 4 with Power-over-Ethernet to power Telos Alliance xNodes, Telos® VSet phones, and other networked devices compatible with the IEEE 802.1af PoE standard. Two Gigabit ports are provided for trunking, both with RJ-45 (copper) and SFP (fiber) connections; supports redundant copper/SFP Gigabit connections with auto-switching. Supports 2,000 Multicast groups and 2,000 ARP table entries (8x more than other small-form Ethernet switches). Web-based management interface uses built-in HTTP server. 9.5" x 11" half-rack form factor allows two xSwitches to be racked side-by-side, or placed in a rackmount with Telos Alliance xNode IP-Audio interfaces. Noiseless and fan-free; can be conveniently placed adjacent to your audio devices, rack-mounted using included hardware, or wall-mounted (with an accessory kit available separately).

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FEATURES

- Fanless design with heavy cast-aluminum heat-sinks is completely silent in-studio. Front-panel heat sinks are cooled by ambient air, not "rack air," eliminating overheating worries.

- Friendly OLED front-panel display with port status, IP address, PoE status and operating temperature readouts - features not available in other switches in this class.

- One-button setup eliminates programming and saves hours of setup time.

- Functions as a core switch for standalone studios, or as an edge switch in larger facilities, or at your Ethernet-connected transmitter site.

- Allows Axia network admins to add network ports economically, a la carte, instead of 24 or 48 at a time.

- xSwitch supports IGMP (Internet Group Management Protocol) Version 2, used to manage Multicast group traffic (an essential part of Livewire's intelligent audio routing system).

- xSwitch can handle up to 2,000 Multicast groups, and 2,000 ARP table entries, meaning it can't run out of bandwidth. (Other 8-port switches support only 250 groups.)

- Superior support for low-latency media streams, using four-level hardware strict priority QoS — other switches have only one strict priority queue.

- Works with Axia iProbe network management software, allowing easy administration from your office PC or remotely via WAN connection.

- Part of Telos Alliance's xNode family, xSwitch can be used as a freestanding device or racked singly or side-by-side with other xSwitch or xNode devices.

- Premium components include rugged cast faceplate and heat sinks, high-resolution OLED displays, and bulletproof power supplies designed for high-availability telecom applications.

IN DEPTH

Your radio station needs programming.
Your network switch shouldn't.

We invented Livewire in 2003, with the idea of saving money in broadcast studio construction by using off-the-shelf Ethernet switches to power networks that distribute broadcast-quality audio nearly anywhere — across the hall, across the building, or across town. Some said it would never work! But 10 years later, Axia is the #1 brand of IP consoles, networks and routing equipment to broadcasters worldwide. Maybe it's because Livewire IP-Audio is so flexible and easy to use that clients regularly tell us of days – even weeks – shaved off of studio installation time with components that simply click together using Cat-5 cables. Not to mention the money they've saved with Axia, compared to old-fashioned hard-wired studio builds.

But Axia fans told us there was one thing that could make Livewire even easier to install: A network switch that doesn't require setup or programming. So our engineers went to work. The result: xSwitch, the world's only zero-configuration network switch designed specifically for the needs of IP-Audio broadcasting.

xSwitch is different from any other Ethernet switch, because it's custom-tailored to the needs of Axia Livewire users. You see, third-party switches – even those certified for use with Axia – require programming to correctly configure them with the QoS settings Axia networks demand. Which generally means connecting a PC to the switch with a special cable, downloading a terminal emulation program, and entering lines of parameters and instructions.

Perhaps you've already got an Axia network installed (thank you!). Will an xSwitch work with the Axia gear you already have? Naturally! xNodes speak Livewire, the AoIP protocol that powers more than 50,000 networked pro audio devices at radio and TV stations around the world. One click to hook up, and they're ready to go.

xSwitch does away with switch programming. Our experts have already pre-configured xSwitch with all the instructions needed to run Livewire perfectly, flawlessly, out of the box. All you have to do is plug it in, perform a quick one-button setup, and start connecting Livewire devices. Easy, yes?

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On the xSwitch's connection panel, you'll find two SFP (Small Form-Factor Pluggable) Gigabit ports, in addition to dual 1000BASE-T copper ports. Use the SFP ports for copper or fiber connections to your Livewire network. The adjacent 1000BT copper ports provide a dual-redundant network interface; if the primary network link is interrupted, the secondary backup connection is automatically activated. You'll also find 8 100-BaseT Livewire ports, 4 with PoE (Power over Ethernet) to power xNodes audio adapters, Telos VSet telephones, or any other network device that uses the IEEE 802.3af standard. Speaking of power, note the internal, auto-ranging power supply with professional IEC connector: you'll never find wall-warts powering Axia gear.

xSwitch is built using the chassis developed for our award-winning xNode family of AoIP audio adapters, the latest generation of half-rack, high-performance IP-Audio interfaces. They're fanless, which means they're noiseless too; you can put them in any studio. They have a versatile mounting arrangement that lets you deploy two xSwitches into just 1RU of rack space (or rack an xSwitch alongside an xNode). This allows you the flexibility to do things impossible before — like combine an xSwitch with xNodes to create a "Supernode". An xSwitch connecting 8 analog xNodes creates a 32x32 stereo router - or a 64x64 mono router - in the space of just 4RU. Great for making an audio snake, for adding I/O to that add-on studio on the next floor, or even as the heart of a standalone studio.

SPECIFICATIONS

Power Supply AC Input

- Auto-ranging supply, 95VAC to 240VAC, 1.0 A, 50 Hz to 60 Hz

- IEC receptacle, internal fuse

- Power consumption: 75 Watts (all PoE ports under load)

Power over Ethernet

- 15.4 W-per-port maximum, 61.6-W switch maximum

Environmental Ranges

- Operating temperature: 32° F to 104° F (0°C to 40°C),

- Relative humidity: <90% (noncondensing)

Physical Dimensions

- 8.5" (22 cm) wide; two may be mounted side-by-side in a standard 1RU rack space (with included mounting kit)

- 1.72" (4.4 cm) height, 11.75" (30 cm) depth

- Shipping Weight: 7 lbs. (3.2 kg.)

- Shipping Dimensions: 17" (43.2 cm) length, 13" (33 cm) width, 7" (17.8 cm) height

Ethernet Switch Specifications

- 4 QoS levels

- VLANs supported: 1

- Hardware filter capacity: 8,000 (this is the total limit of MAC addresses + multicast group count supported).

- Supported protocols:

    - IPv4 hardware switching

    - IGMP version 2 snooping

    - IGMP snooping querier

    - DSCP (IP Type Of Service based priority)

    - 802.1p (Ethernet 802.1Q tag priority)

    - HTTP (WEB based management)

- Ports 100BT 1, 2, 3, 4: 100BASE-T Fast Ethernet (10/100MBit/s), Power-over-Ethernet source

- Ports 100BT 5, 6, 7, 8: 100BASE-T Fast Ethernet (10/100MBit/s)

- Ports GIG 1, 2: 100BASE-T Copper or SFP (Small Factor Pluggable Transceiver) module

IGMP Snooping Parameters

- Router present time out: 400s

- Query Response Interval: 10s

Connector Specifications

10/100/1000 Ports
The 10/100/1000 Ethernet ports use standard RJ-45 connectors.

Connecting to 100BASE-T-Compatible Devices
When connecting the ports to 100BASE-TX-compatible devices, you can use a two or four twisted-pair, Category 5e, straight-through cable.

Connecting to 1000BASE-T Devices
When connecting the ports to 1000BASE-T devices, you must use a four twisted-pair, Category 6, straight-through cable.

SFP Module Ports
The SFP module slot on a dual-purpose port uses SFP modules for fiber-optic and copper uplink ports. xSwitch works with the following supported SFP modules:
- Cisco Copper SFP Model:GLC-T=

- Cisco Copper SFP Model: SFP-GE-T=

- Cisco Multimode fiber model: GLC-SX-MMD=

- Cisco Multimode fiber model: GLC-SX-MM-RGD

Regulatory

North America: FCC and CE tested and compliant, power supply is UL approved.

Europe: Complies with the European Union Directive 2002/95/EC on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS), as amended by Commission Decisions 2005/618/EC, 2005/717/ EC, 2005/747/EC (RoHS Directive), and WEEE.