

The Extron **FOX Matrix 7200** is a high performance, modular fiber optic matrix switcher for complete, end-to-end digital AV signal transmission and routing over fiber optic cable. The matrix switcher is expandable from 8x8 up to 72x72, and is fully compatible with FOX Series transmitters and receivers. Supporting video resolutions up to 4K, it features very high speed, all-digital switching of DisplayPort, HDMI, DVI, 3G-SDI, RGB, HD component, and standard definition video. Equipped with the integration-friendly features common to Extron matrix switchers, together with hot-swappable I/O boards and fan, real-time system monitoring, and redundant, hot-swappable power supplies, the FOX Matrix 7200 delivers highly reliable, enterprise-wide switching of fiber optic AV and control signals for mission-critical environments.

Fiber Matrix Architecture

The FOX Matrix 7200 is a modular design featuring nine board slots. Each slot accepts a FOX I/O 88 board having eight ports populated with LC-type fiber optic connectors. Two versions of the board are available. The FOX I/O 88 MM supports multimode fiber at 850 nm, which is typically used within buildings or facilities with moderate-range transmission distances. The FOX I/O 88 SM supports singlemode as well as multimode fiber at 1310 nm. Singlemode fiber offers long-range transmission capability over extreme distances of several kilometers or miles. It is used in very large facilities such as hospitals and stadiums, and for connecting over very long distances between facilities such as university campuses.

The FOX Matrix 7200 can be configured with all or some of the board slots occupied. The I/O boards are hot-swappable and may be added at any time in the field for easy and quick upgradeability or expansion. The FOX Matrix 7200 also accommodates any combination of singlemode or multimode I/O boards. This can allow, for example, a multimode fiber link input to the matrix switcher from a multimode transmitter, and a singlemode output from the switcher for transmission over extreme distances to a singlemode receiver.

Flexible I/O Configuration

Each fiber optic port comprises two individual fiber links. In the standard I/O configuration for the FOX Matrix 7200, these links are defined as a separate input and a separate output. Therefore, up to 72 single fiber link inputs and 72 single fiber link outputs are possible when configuring and controlling the matrix switcher with the Extron control software.

However, through RS-232 serial control, each fiber optic connection can also be defined as a "linked" input or output, with the two fiber optic links supporting bidirectional capabilities for a FOX Series product. Any group of linked connections, anywhere on the rear panel can function as inputs or outputs, enabling the creation of a custom I/O configuration. For example, a FOX Matrix 7200, populated with two I/O boards and 16 available linked connections, may be operated as a 12x4 bidirectional switcher. In the standard I/O configuration, these same two boards would support 16x16 switching with single fiber link inputs and outputs. For added flexibility, the FOX Matrix 7200 can function with a combination of linked and single fiber link inputs and outputs.

Streamlining Migration to 4K Video Distribution

Designed with uncompromising quality and proven performance, FOX Matrix Switchers are designed to work with all FOX and FOX II Series products. When used with FOX II 4K Series extenders, Extron FOX Matrix Switchers accept and route 4K video, multi-channel audio, and control, enabling a 4K video distribution system up to 1000x1000 and larger. This capability enables existing FOX systems to be easily upgraded to 4K resolutions without requiring any cabling, hardware, software, or firmware updates to the matrix, streamlining the migration path to 4K resolutions. Extron FOX Matrix Switchers are ideal for 4K video distribution in a wide variety of applications, including simulation, defense, medical, entertainment, digital cinema, and other environments.

Designed for Secure Systems

The FOX Matrix 7200 uses two methods to ensure sensitive data is properly segregated and protected – Priority Switching and Secure Partitioning. Priority Switching assigns a security level to each input and output. Six security levels are available, with the sixth being the highest level. An output can only be tied to

an input at the same security level or lower, preventing unauthorized access to sensitive data. For example, an output at security level five can be tied to inputs that are security level five or lower. However, an output at security level one, the lowest level, can only be tied to inputs that are also security level one. Priority Switching is useful in systems with multiple security classification levels.

Secure Partitioning enables the matrix switcher to be divided into smaller sub-switchers for segregating sources and destinations into partitions. Sources can only be routed to destinations within the same partition. Any attempt to tie an input and output in different partitions is prohibited, returning an error code. Up to 12 partitions are available. Secure Partitioning is useful for separating secure and unclassified data.

3G-SDI Signal Switching and Distribution

The FOX I/O 88 HD-SDI board is available as an option for the FOX Matrix 7200, and enables connection to local 3G-SDI-equipped devices. This board offers an 8x8 configuration for switching and distribution of signals up to 2.97 Gbps, including 3G-SDI, HD-SDI, and SDI. With this board, the FOX Matrix 7200 can be configured as a dedicated 3G-SDI matrix switcher up to 72x72, or for a combination of SDI and fiber optic matrix switching. The FOX I/O 88 HD-SDI board is compliant with SMPTE 259M, 292M, 424M, and ITU digital video standards. Each input and output on this hot-swappable board is individually buffered to maximize performance with virtually no crosstalk. To optimize transmission to and from the board, input signals are automatically equalized and output signals are reclocked. The FOX Matrix 7200 provides separate bi-level and tri-level references for correct vertical interval switch timing.

The FOX I/O 88 HD-SDI board enables a local BNC connection to the FOX 3G HD-SDI fiber optic extender for 3G-SDI. Incoming signals from the FOX 3G HD-SDI can then be routed to the board's BNC outputs, or through the fiber optic outputs to remote FOX 3G HD-SDI units. Similarly, local BNC inputs can be output on fiber or BNC. In broadcast and production applications, a 3G-SDI-equipped FOX Matrix 7200, together with several FOX 3G HD-SDI units, offers expanded opportunities for system integration. For example, the FOX Matrix 7200 can be used to route signals to and from local editing equipment, while also providing the capability to receive or transmit 3G-SDI signals very long distances to devices in remote locations, such as cameras and production monitors.

The Extron FOX 3G I/O 88 SM P board is available as an option for the FOX Matrix 7200 modular fiber optic matrix switcher, and enables the transmission and distribution of fiber optic 3G-SDI signals, including pathological signals, over singlemode fiber optic cabling. The board offers an 8x8 configuration for switching and distribution of signals up to 2.97 Gbps, including 3G-SDI, HD-SDI, and SDI. With the board, a FOX Matrix switcher can be configured as a dedicated 3G-SDI matrix switcher, or with a combination of SDI and fiber optic matrix switching solutions. The FOX 3G I/O 88 SM P board is compliant with SMPTE 259M, 292M, 424M, RP 178 and RP 198 for pathological immunity, and ITU digital video standards.

Familiar, Integrator Friendly Matrix Switcher Features

The front panel offers the QS-FPC™ - QuickSwitch Front Panel Controller with tri-color backlit buttons as a standard feature. Additionally, 64 memory presets are available for saving and recalling commonly used input and output ties. Furthermore, a rooming feature enables the creation of 10 rooms by groups of outputs, each with separate presets.

Self-Monitoring and Hot-Swappable

The FOX Matrix 7200 is designed for optimum performance and reliability in applications requiring continuous operations 24 hours a day, seven days a week, such as in government, military, and medical installations. A real-time monitoring system continuously provides self-diagnostics of the I/O boards, fiber links, power supplies, internal fans, and general functions of the switcher. LED indicators on each I/O board provide a quick verification of input signal presence as well as the status of fiber links with the transmitters and receivers. The FOX Matrix 7200 can be configured to trigger an external control system, generate SNMP traps, or send e-mail alerts when an inbound fiber link has been lost.

Each I/O board is hot-swappable so that the matrix switcher can be serviced or reconfigured without interrupting all signal routing by powering down the unit. The FOX Matrix 7200 also features a hot-swappable fan, and dual redundant and hot-swappable power supplies to ensure continuous, uninterrupted power.

Control

The FOX Matrix 7200 offers convenient user control through the standard front panel controller. Remote system access for configuration, operation, and monitoring is available through the front and rear panel RS-232 serial control ports and Ethernet control. The FOX Matrix 7200 is also compatible with the MKP 3000 X-Y Remote Control Panel that provides a convenient user interface to control the matrix switcher from remote locations.

Features

- **I/O sizes from 8x8 to 72x72**
- **Compatible with Extron FOX Series distribution amplifiers and switchers**
- **Compatible with all Extron FOX Series transmitters and receivers**
- **Compatible with FOX II 4K Series transmitters and receivers for end-to-end 4K video distribution systems** — FOX systems can be easily upgraded to 4K resolutions without any cabling, hardware, software, or firmware updates to the matrix, streamlining the migration path to 4K resolutions.
- **SpeedSwitch® Technology provides exceptional switching speed for HDCP-encrypted content**
- **Integrates easily into a wide range of 4K environments** — FOX Series matrix switchers and extenders can be configured for use with 4K sources and displays with resolutions up to 4096x2160.
- **Multimode and singlemode I/O boards available** — The FOX Matrix 7200 is configurable with a mix of multimode and singlemode versions of the FOX I/O 88 boards, so that both short and long haul transmission can be supported.
- **3G-SDI I/O board available** — The FOX Matrix 7200 can be configured with the FOX I/O 88 HD-SDI board for local connection to SDI-equipped devices. This board provides 8x8 routing of incoming signals up to 2.97 Gbps, including 3G-SDI, HD-SDI, and SDI. The matrix switcher can be configured as a fully dedicated 3G-SDI matrix switcher, or a combination of SDI and fiber optic matrix switching. The FOX I/O 88 HD-SDI board is compliant with SMPTE 259M, 292M, 424M, and ITU digital video standards.
- **Modular, field-upgradeable and hot-swappable design** — The FOX Matrix 7200 provides substantial flexibility, expandability, and affordability by allowing users to select the configuration required for their systems. Additional input and output boards may be added at any time for easy and quick upgradeability or expansion. Hot-swappable components allow the user to replace an I/O board, fan assembly, or power supply at any time without the need to power down the switcher. This is especially useful for mission-critical applications that require continuous operation.
- **Dual redundant and hot-swappable power supplies** — Primary and back-up power supplies provide added reliability for critical applications.
- **Secure Partitioning segregates sources and destinations in a secure environment** — Secure Partitioning enables the FOX Matrix 7200 to be partitioned into smaller sub-switchers for segregating sources and destinations. Sources can only be routed to destinations within the same partition.
- **Priority Switching prevents unauthorized access to sensitive data in a secure environment** — Each input and output is assigned a security level. An output can only be tied to an input at the same security level or lower, preventing unauthorized access to sensitive data in a secure environment.

- **Low power consumption for efficient cooling, lower costs, and longer life** — The FOX Matrix 7200 features an energy-efficient design for simpler cooling, lower energy costs, and extended life. Through efficiency of design and the careful selection of high quality, long-life electronic components, an all optical, fully-loaded FOX Matrix 7200 draws less power than comparable fiber optic matrix switchers. Low power consumption equates to less heat generation, which translates to a lower cost of ownership and an increased product lifespan.
- **Video genlock** — When used with the FOX I/O 88 HD-SDI board, separate bi-level and tri-level references are provided for correct vertical interval switch timing for SDI and HD-SDI signals.
- **Advanced computer-aided diagnostics** — Provide 24-hour self-diagnostics of input/output boards, primary and redundant power supply voltages, fiber links, and overall functional status of the matrix. Using the Ethernet or RS-232/RS-422 communications port, status monitoring is possible for off-site or unmanned locations, such as government, military, medical, or any other sensitive, 24/7 environments.
- **Input fiber link detection** — The FOX Matrix 7200 verifies active light sources by polling all connections for input reception and output transmission. The resulting information is viewable within the internal Web pages, and is easily obtained by AV control systems.
- **Status LED indicators for fiber link and reclocking status** — LEDs on each I/O board verify active fiber links with the transmitters and receivers.
- **Alarm notification for fiber link loss** — The FOX Matrix 7200 can be set up to trigger an external control system, or generate e-mail alerts, for immediate notification when an inbound fiber link has been lost.
- **Two AC power inputs** — For added power reliability, some 24-hour environments require two separate AC power sources, one as the primary source and the second for redundancy. The FOX Matrix 7200 provides two AC power inputs for continuous connection to both power sources.
- **Selectable input and output reclocking** — Reshapes and restores timing of the digital signal at the selected rate.
- **Industry standard LC connectors provide reliable physical connectivity and precise fiber core alignment**
- **QS-FPC™ - QuickSwitch Front Panel Controller with tri-color backlit buttons** — Provides a discrete button for each input and output, allowing for simple, intuitive operation. Buttons can be custom labeled for easy identification. The buttons illuminate red, green, or amber, depending on function, for ease of use in low-light environments.
- **View I/O mode** — Users can easily view which inputs and outputs are actively connected, from the front panel, RS-232 or RS-422 serial port, or Ethernet port.
- **I/O grouping** — Allows the matrix switcher to be virtually divided into smaller sub-switchers, making installation and control easier. I/O grouping allows specific outputs, like those designated for a specific video format, to be grouped together.
- **Rooming** — The FOX Matrix 7200 can be configured to group selected outputs into specific "rooms," each with its own set of unique presets. A total of 10 rooms, with 10 presets per room, are available.
- **Global presets** — Frequently used I/O configurations may be saved and recalled from the QS-FPC - QuickSwitch Front Panel Controller, serial, or Ethernet control. This time-saving feature allows I/O configurations to be set up and stored in memory for future use.
- **Front panel security lockout** — Prevents unauthorized use in non-secure environments. In lockout mode, a special button combination is required to operate the switcher from the front panel controller.
- **Extron control software** — For serial or Ethernet remote control from a PC, the included Windows®-based control software features a graphical, drag-and-drop interface to make I/O configuration and other customization functions simple and convenient. This software also offers an emulation mode for

configuration of an offsite matrix switcher; the I/O configuration may then be saved for future downloading to the FOX Matrix 7200.

- **Ethernet monitoring and control** — The FOX Matrix 7200 can be proactively monitored and managed over a LAN, WAN, or the Internet, using standard TCP/IP protocols. Ethernet control provides for remote selection of input and output ties, system set-up and configuration, and advanced system diagnostics.
- **SNMP support for remote monitoring**
- **RS-232 and RS-422 control port** — Using serial commands, the FOX Matrix 7200 can be controlled and configured via the included Windows-based control software, or integrated into a control system. Extron products use the SIS™ - Simple Instruction Set command protocol, a set of basic ASCII code commands that allow for quick and easy programming. The RS-232 and RS-422 port also makes it easy to install firmware updates.
- **Front panel configuration port** — A front panel serial port allows easy accessibility for configuring the FOX Matrix 7200 without having to access the rear panel.
- **New JITC Certified** — Successfully completed interoperability and information assurance testing for use in government applications and other mission-critical environments.
- **Rack-mountable 8U, full rack width metal enclosure**

Note: FOX I/O 88 boards, part numbers 70-791-01 and 70-791-02, and replacement power supply, part number 70-704-01, are designed for use with the previous versions of the FOX Matrix 7200 Frame, part number 60-1011-01.