

Trinix NXT

DIGITAL VIDEO ROUTING TO 3 Gb/s

Setting the standard for superior signal performance and uncompromising reliability, the Trinix NXT is the best-selling digital video routing switcher in the world. With more than 30% lower operating costs and the unique capability to upgrade existing systems with 3 Gb/s processing, as well as multiviewer and fiber optic I/O, Trinix NXT protects your investment now and into the future.



The Trinix™ NXT digital video routing switcher is designed for continuous and reliable operation in large and very large configurations. Its reliability and scalability are field-proven in configurations up to 2,048 inputs or outputs. The routing switcher's superb heat management—along with its efficient power usage, low cooling costs, and long system life—results in the lowest operating costs in the industry. Simply put, it sets the standard and is the secure choice for your business today and in the future.

A Pedigree of Reliability

The original Trinix platform is the world's most popular broadcast routing switcher, with more than sixty million crosspoints continuously in service. For you, this means a pedigree of reliability that you can trust now and into the future.

All Trinix routing switcher customers can upgrade to 3 Gb/s, and add the latest feature options such as the integrated Trinix NXT Multiviewer, no matter when they purchased their routing switcher. This illustrates the long-term support and forward-thinking design of the Trinix platform.

Superior Design

Not all digital processing is the same. The Trinix NXT routing switcher architecture keeps the signal path as simple as possible while incorporating the very best and latest circuit technology. This architecture reduces the number of separate circuit cards, which, in turn, shrinks the number of local power supply components, interconnections, and distributed control circuits. Fewer circuits mean more straightforward signal paths and more room on boards for optimized layouts.

Special PC board substrate materials, the use of the latest generation of 3 Gb/s devices and designs, and other advanced engineering techniques enhance the ability of these boards to ensure that you will spend less time troubleshooting or adding workarounds to recover signals that have reached their limits.

The result is superior signal stability and unmatched performance—even in the tight jitter tolerance ranges of 3 Gb/s processing. Independently certified to meet or exceed all 3 Gb/s standards, the Trinix NXT also features improved SDI and HD-SDI handling, making it the best routing switcher for any signal type.

Better Cooling

With fewer duplicated circuits, the Trinix NXT routing switcher has an industry-leading low power consumption, which reduces operating costs and air-conditioning expenses.

KEY FEATURES

- Digital video routing switcher – highly optimized circuitry for better 3 Gb/s (1080p) and HD-SDI signal performance
- Proven performance with more than 60,000,000 crosspoints installed
- Low power and operating costs, reduced fan noise, and extended service life
- Routes different formats and frame rates in the same chassis. One routing switcher satisfies all of your operational requirements
- Supports configurations up to 2048x2048 to meet your routing needs today and as your business evolves
- Switches large numbers of crosspoints simultaneously:
 - High-capacity, frame-accurate control interface
 - Prevents interference between separate operations on the same router
- Unique protected path redundancy with automatic failover and passive path switching
- Front-loading, hot-swappable modules for ease of service
- Comprehensive SNMP and Web-based monitoring tools for ease of service – locally or remotely
- Trinix NXT Integrated Multiviewer:
 - 32 scalars/inputs and 8 outputs per multiviewer card
 - Simultaneously supports all video standards on all inputs and outputs
 - Supports 128+ images on a single output without rescaling
 - Supports an image spanning multiple monitors
- Trinix NXT Fiber Optic I/O:
 - SD / HD / 3 Gb/s E-to-O and O-to-E signal conversion and optical transmission up to 50 km
 - Electrical or optical boards in the same frame at the same time
 - CWDM SFP support for optical multiplexing

Reducing cards and connectors also increases the routing switcher’s internal airspace. This airspace, along with its low-power circuitry, makes the Trinix NXT much easier to cool. The Trinix NXT routing switcher is also more resistant to hot spots, which degrade signal performance and cause early failure.

The Trinix NXT routing switcher uses a common plenum chamber and all its cooling power is applied to all the circuits. It also uses blowers rather than noisy fans to improve cooling efficiency.

The airflow of the routing switcher follows natural convection from bottom to top, which suits air conditioning installations as they are designed to handle hotter air higher up.

Superior Performance

With an ultra-fast switching bus, the Trinix NXT solution provides exceptional performance with the capability to switch hundreds of crosspoint switches on any frame boundary to maintain frame accuracy, even when under a heavy load.

By adding an optional port expander, the router can distribute each output to two destinations. This option eliminates the need for any additional distribution amplifiers, saving costs and reducing power consumption.

Advanced Protection

The Trinix NXT routing switcher offers enhanced signal protection with three different redundancy options that allow a system architect unprecedented flexibility. Two of these schemes are unique in that they provide protection while increasing reliability.

Redundant Matrix Protection

The core of any routing switcher is its central matrix circuit. For smaller installations, protecting this key component can be important. The Trinix NXT platform offers a redundant matrix solution on some models to protect this vital circuit. This is the platform’s basic level of redundancy.

Protected Paths

Protected paths work by providing two completely redundant paths through the routing switcher. These include the input, matrix, and output circuits. As a result, the whole path is protected.

Protected paths allow a system architect to assign protection for only the key inputs and outputs—a targeted and highly effective approach.

The reliability limitation of most redundancy solutions is that they use an active, and therefore failure-prone, circuit to implement the change over from main to spare. Protected paths use passive path selection to change over. For this reason, the Trinix NXT routing switcher can deliver the additional protection of a redundant solution without degrading its reliability.

Protected Router

The protected router system uses the same dual-path concept as the protected-path option and has the same high-reliability passive-path selection. Because it protects the whole router, the second routing switcher takes over if any component fails for any reason.

If you install two routing switchers in a dual redundant configuration you do not need redundant components within each

routing switcher, an on-the-shelf spare, or even a patch bay. Rather than have your backup solutions on the shelf, you can have them online 24x7, waiting and ready to automatically switch on.

Leading Connectability

Four reference sources, two standard and two optional, give you the flexibility to operate multiple timing planes, or even multiple video standards, within one Trinix NXT chassis. They also enable you to partition the routing switcher to support different operational requirements simultaneously.

The Trinix NXT routing switcher can also support dual outputs, saving the need for bulky, costly external distribution amplifiers. This support is made possible by adding passive external splitters to deliver the extra copies of the signals.

The platform also includes four monitor outputs. Unlike assigning normal outputs to monitoring duties, these are true output monitors so you can really see the signal leaving the routing switcher, not just another copy of the input.

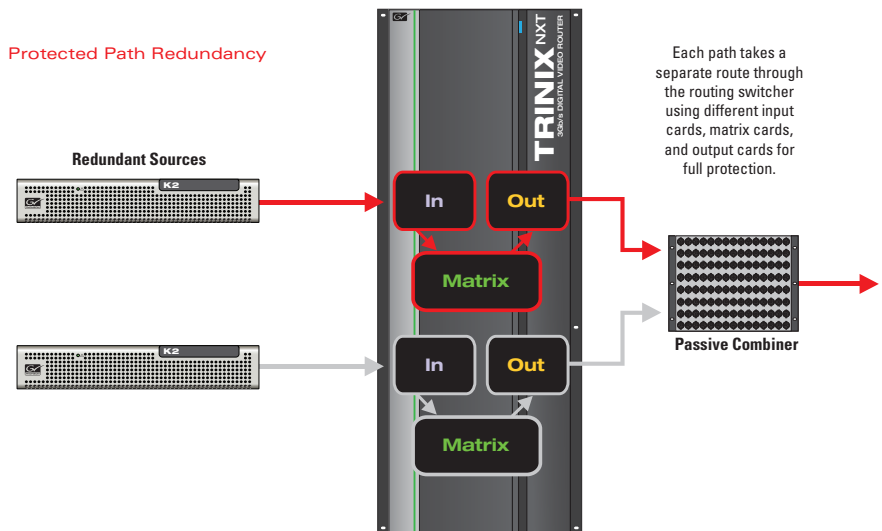
The Trinix NXT routing switcher is supported by the majority of Grass Valley™ control systems. These include the Jupiter™ and Encore™ control systems.

The routing switcher also fully supports SNMP, allowing it to easily integrate into your standard monitoring systems, including the Grass Valley NetCentral™ monitoring application.

To streamline the setup process, the Trinix NXT platform supports our NetConfig™ application. This Ethernet-based software streamlines product installation and in-field upgrades.

TRINIX NXT REDUNDANCY OPTIONS

The fully protected paths option of the Trinix NXT platform protects all circuit paths in the router—all the way back to redundant sources if you use them (see right). A failure in any circuit board or in the signal-source chain triggers an automatic failover. As the most cost-effective way to protect your most important signal paths, this option uses the Trinix NXT system’s passive port expander tools—the same splitting and combining circuits used in expanded systems. These tools offer maximum reliability at no added power cost and can be implemented in single- or dual-router configurations.



Superior Serviceability

Trinix NXT routing switchers have been engineered from the bottom up for serviceability. All active signal path components are hot-swappable from the front of the frame and the backplanes are all completely passive.

Power supplies, controller card, blowers, and some matrix cards can be installed in redundant configurations.

The comprehensive alarm system, multifaceted communications, and easy parts replacement of the Trinix NXT routing switcher that it keeps running with minimal service effort.

Frame-Size Choice

The Trinix NXT routing switcher offers an unrivalled choice of frame sizes to match your performance and density requirements. The available sizes include 128x128, 256x256, and 512x512 square matrix frames. Asymmetrical frames include 128x256, 256x512, and 512x1024 (available Q3 2011).

Larger routing switchers can be constructed using several frames. Many HD-SDI switchers up to 2,048 are already in operation.

Variable Input Flexibility

The unique variable input (VI) card of the Trinix NXT platform provides the ultimate in simplicity for those on a migration path from analog to digital. With support for signal types from analog composite through SDI digital to HD-SDI rates, the VI card provides a comprehensive solution. Its exceptional flexibility allows it to handle each input individually so that you can migrate systems, one circuit at a time, from analog to HD-SDI.

In other systems, you have to change an entire card to upgrade part of the router, meaning that changes have to be planned in groups that suit the router, not your operation.

Trinix Expanded Capabilities

Trinix continues to evolve and add value with exciting new capabilities. Existing Trinix installations can be upgraded with the new Trinix NXT Multiviewer, as well as 3 Gb/s electrical and fiber optic I/O cards—a demonstration of the long-term support offered by Grass Valley. While all the signal circuitry is new, these Trinix NXT options are compatible with all previously installed Trinix units as a result of a superior digital and RF architecture—better than 3 Gb/s from the very first chassis sold.

Trinix NXT Multiviewer (available Q3 2011)

The Trinix NXT Multiviewer is a fully integrated, internal component of the Trinix NXT router and represents a unique, next-generation approach to live event broadcast and production multiviewer solutions in 3G. It optimizes space by eliminating secondary external components and connections that consume valuable rack space, as well as the need for additional cabling and other hardware—all of which lead to a more reliable multiviewer.

Each Trinix NXT Multiviewer includes eight SDI monitor outputs with each output capable of independently supporting any standard video format from 480i to 1080p. By using the card's cascade capability, the system can also support more than 128 images on a single output or create a true video

cube, with one image spanning multiple monitors without rescaling the cascaded signals.

The Trinix NXT Multiviewer includes two MAD1 inputs for discrete AES audio monitoring in addition to its embedded audio monitoring capabilities from any source routed to the multiviewer. The multiviewer features sophisticated graphics, tally, and UMD support, along with powerful signal monitoring, status, and alarming while drawing an average of less than 75 watts.

Trinix Fiber I/O (available Q2 2011)

As the migration to HD and 3G signals continues, so does the need to support their higher bandwidth signals. However, those higher bandwidth signals have distance limitations. To overcome this limitation, Trinix uses a high-quality, proven technology solution: fiber optics.

Fiber is much less restrictive and delivers long-haul signal conversion and transmission up to 50 kilometers/31 miles. With external CWDM optical multiplexing, up to 16 full-bandwidth channels can be transmitted those distances over a single fiber. Moreover, the superior electrical isolation and noise immunity of fiber optics results in enhanced overall signal quality.

Trinix supports both electrical and optical I/O boards—in the same router, at the same time. This provides users the signal format flexibility when they need it. Trinix Fiber I/O boards are fiber-ready, meaning users decide between a standard or CWDM SFP and when to purchase and install it at the rear panel. It's plug-and-play simple.

SPECIFICATIONS

Electrical

General

Input Cards: SI-33110 (SD), VI-33100 (SD/HD/AV), HI-33200 (SD/HD), and HI-3G (SD/HD/3 Gb/s) – 32 inputs each

Matrix Cards:

- DM-33100 (SD/HD) 128x128
- DM-33512 (SD/HD) 256x256
- DM128R-3G (SD/HD/3G) 128x128 with redundancy
- DM128-3G (SD/HD/3G) 128x128 without redundancy
- DM256-3G (SD/HD/3G) 256x256

Output Cards: SO-33110 (SD), HO-33120 (SD/HD), and HO-3G (SD/HD/3 Gb/s). 32 inputs each. The SO-33110 is non-reclocking. The HO-33120 and HO-3G are reclocking for all standard rates of 143 Mb/s to 1.5 Gb/s (HO-33120) and 143 Mb/s to 3 Gb/s (HO-3G)

Connectors: 75Ω BNC

Video Inputs

Level: 800 mVp-p ($\pm 10\%$) 75Ω terminating

Return Loss: ≥ 15 dB up to 1.5 GHz, ≥ 10 dB 1.5 GHz to 3 GHz

SD: ≥ 15 dB from 5 MHz to 540 MHz

Sync Inputs

Level: Nominal 1 Vp-p (± 6 dB) video

Return Loss:

- ≥ 40 dB from 100 kHz to 20 MHz
- ≥ 30 dB from 20 MHz to 30 MHz

Video Outputs

Level: 800 mV p-p $\pm 10\%$ 75Ω

Return Loss: ≥ 15 dB up to 1.5 GHz, ≥ 10 dB 1.5 GHz to 3 GHz (except monitor outputs)

Performance Characteristics

Signal Standards: SMPTE 424M, SMPTE 292M-1998, SMPTE 259M-1997 (output rise and fall times correspond to SMPTE 292M)

Equalization:

- 3 Gb/s: automatic up to 140 meters of Belden 1694A or equivalent coax cable
- HD: automatic up to 160 meters of Belden 1694A
- SD: Automatic up to 450 meters of Belden 1694A

Data Reclocking: Switch selectable on an output-by-output basis

Output Jitter:

- 3 Gb/s: ≤ 0.3 UI
- HD: ≤ 0.2 UI
- SD: ≤ 0.2 UI

AV to SD-SDI Conversion:

- Signal type: NTSC, PAL
- Signal level: 0.5 – 2 Vp-p, 1 Vp-p nominal 75Ω terminating
- Return loss: input >40 dB to 5.75 MHz, output >15 dB to 270 Mb/s, reference >36 dB to 5 MHz
- Signal/noise: >59 dB RMS to 5.5 MHz
- Luma frequency response: ± 0.1 dB to 5 MHz
- Chroma/luma delay: <10 ns
- Differential phase: <1 degree
- Differential gain: $<1\%$

AC Power Input

Mains Connection: IEC connector, separate mains input for each power supply module

Voltage Range: 100-240V 50-60 Hz, universal, auto-ranging (fuses must be selected and installed as appropriate for mains voltage)

SPECIFICATIONS (CONT.)

Operating Current:

- 128x128 frame: approx. 5.36A @ 100V, approx. 2.23A @ 240V
- 256x256 frame: approx. 9.36A @ 100V, approx. 3.90A @ 240V
- 256x512 frame: approx. 19A @ 120V, approx. 10A @ 240V
- 512x512 frame: approx. 19.08A @ 100V (9.54A per supply); approx. 7.63A @ 250V (3.82A per supply)

Inrush Current:

- 128x128 frame: 49.05A
- 256x256 frame: 55.0A
- 256x512 frame: 25.0A
- 512x512 frame: 45A per supply

Hold-up Time: Minimum 20 ms at full load

Conducted Emissions: Per FCC Class B, EN55022 Class B

Power Supply DC Output

Voltage: +48 (±0.5) VDC

Current:

- 128x128 frame: 12.5 A/supply (full redundancy)
- 256x256 frame: 26 A/supply (full redundancy)
- 512x512 frame: approx. 26 A/supply (full redundancy)

Current Sharing: Yes, maximum 20% differential unbalance

Ripple/Noise: <200 mV p-p

DC Power Input

Input Voltage Range: 42-54 VDC

Operating Current:

- 128x128 frame: approx. 9.5A @ 48 VDC
- 256x256 frame: approx. 16A @ 48 VDC
- 512x512 frame: approx. 34A @ 48 VDC

Inrush Current:

- 128x128 frame: 15A
- 256x256 frame: 21A
- 512x512 frame: approx. 25A

Alarm

The relay connector is a BNC type and meets SMPTE 269M-1999

Environmental

+0°C to +35°C (+32°F to +95°F)

Physical Characteristics

512 x 512 Frame Dimensions

Main Chassis:

- Height: (28 RU) 1245 mm, 49 in.
- Width: 483 mm, 19 in.
- Depth: 445 mm, 17.5 in.

Power Supply Chassis:

- Height: (4 RU) 178 mm, 7 in.
- Width: 483 mm, 19 in.
- Depth: 533 mm, 21 in.

256x512 Frame Dimensions

- Height: (22 RU) 978 mm (38.5 in.)
- Width: 483 mm (19 in.)
- Depth: 445 mm (17.5 in.)

256 x 256 Frame Dimensions

- Height: (15 RU) 667 mm, 26.25 in.
- Width: 483 mm, 19 in.
- Depth: 445 mm, 17.5 in.

128 x 128 Frame Dimensions

- Height: (8 RU) 356 mm, 14 in.
- Width: 483 mm, 19 in.
- Depth: 445 mm, 17.5 in.

MK-33000 Mounting Kit

(for port expansion)

- Height: (8 RU) 356 mm, 14 in.
- Width: 483 mm, 19 in.
- Depth: 100 mm, 4 in.

ORDERING INFORMATION

Frames, Fans, and Power Supplies

TRX-NXT-128x128

Trinix NXT system 128 chassis with one PS, one Broadlinx™, two fan modules

TRX-NXT-256x256

Trinix NXT system 256 chassis with one PS, one Broadlinx, three fan modules

TRX-NXT-256x512

Trinix NXT system 256x512 chassis with 1 RU PS-chassis, two PS, one Broadlinx, seven fan modules

TRX-NXT-512x512

Trinix NXT system 512 chassis with PS-chassis, two PS, one Broadlinx, six fan modules

TRX-PS-33100

Trinix NXT system power supply: 128 chassis

TRX-PS-33200

Trinix NXT system power supply: 256 and 512 chassis

TRX-PSFRM-1RU

Trinix 1 RU power supply chassis with interconnect cables for 256x512 chassis

TRX-PSU-1200W

Trinix power supply: 256x512 chassis

I/O & Matrix

TRX-SI-33110

Trinix NXT system SD input board – 32 inputs

TRX-HI-33200

Trinix NXT system HD/SD input board – 32 inputs, dual-rate equalization

TRX-HI-3G

Trinix NXT system 3G input board – 32 inputs, automatic equalization

TRX-VI-33100

Trinix NXT system variable input board – 16 HD/SD/AV and 16 HD/SD signals

TRX-SO-33110

Trinix NXT system SD output board – 32 outputs, non-reclocked

TRX-HO-33120

Trinix NXT system HD/SD output board – multi-rate reclocker

TRX-HO-3G

Trinix NXT system 3G output board – 32 outputs

TRX-DM-33100

Trinix NXT system matrix board – 128x128 for use with 128 and 256 chassis

TRX-DM128R-3G

Trinix NXT system matrix board – 128x128 redundant for use with 128 and 256 chassis. Supports 3 Gb/s

TRX-DM-128-3G

Trinix NXT system matrix board – 128x128 for use with 128 and 256 chassis. Supports 3 Gb/s

TRX-DM-33512

Trinix NXT system matrix board – 256x256 for use with 512 chassis

TRX-DM256-3G

Trinix NXT system matrix board – 256x256 for use with 512 chassis. Supports 3G

Accessories

TRX-CTRL-CPL

CPL control

TRX-CTRL-XPT

XPT control

TRX-BL-33000

Trinix NXT system Broadlinx software board – NIC, sync, output monitor

TRX-PE-33016-1

Trinix NXT system port expander – 16 port; 2x2. SD/HD

TRX-PE-33008-1

Trinix NXT system port expander – 8 port; 4x1. SD/HD

TRX-MK-33000

Trinix NXT system mounting kit for port expanders (fits 16 PEs)

TRX-FM-33000

Trinix NXT system fan module

TRX-PE2x2-3G

Trinix NXT system port expander – 16 port; 2x2. SD/HD/3G

CUSTOMER SUPPORT & PROFESSIONAL SERVICES

Our customer support and professional services offerings ensure optimal system performance and maximize uptime. These services include call centers staffed around the clock, commissioning, professional training courses, and technical maintenance programs and service agreements.

www.grassvalley.com/support

