

# UTAH-400 Large Router Family



The UTAH-400 Large Router family was developed to provide a single platform for all digital router applications where extremely large matrix configurations are required for all digital video signal formats. Thanks to an innovative matrix architecture, the UTAH-400 large routers are readily scalable 288x288 to 1056x1056 and beyond using a single family of matrix building blocks. In addition to this flexibility of configuration, the UTAH-400 offers tremendous reductions in the physical space and power consumption requirements of large routing systems.

The UTAH-400 uses a three-board architecture consisting of an input board, a crosspoint board, and an output board. All frames and internal signal distribution components are designed for 3G HD signal compatibility, with full compatibility with all of the lower data rate formats. The UTAH-400 large router family consists of video frames for 528x528 and 1056x1056 matrix sizes. Both of these frames use a common set of modules described below.

**MODULE DESCRIPTIONS**

*INPUT BOARD*

The input board carries twelve identical receiver / buffer circuits for bringing the input signals from the rear panel into the matrix and delivering them to the crosspoint board. Each input circuit has a signal presence detector that can send an alarm to the frame's alarm processor when it detects a loss of signal on the input. The High Definition Input Board offers 100 meters of equalization at 3G data rates and can accept digital video signals at any data rate from 3Mbps up to 3Gbps.

*CROSSPOINT BOARD*

The crosspoint board receives its inputs from the input cards and applies these signals to the crosspoint array. This array is fitted with the appropriate number of integrated circuit crosspoints for the frame in which it is to be used. The crosspoint board's control inputs come from the system controller by way of a pair of Utah MX-Bus connectors mounted on the frame's rear panel. The outputs of the crosspoint array are passed onto the Output Boards by the Output Bus.

*OUTPUT BOARD*

The Output Board carries twelve identical driver circuits that buffer the signals from the Output Bus and present them to the connectors at the rear panel of the frame. Each output circuit has a signal presence detector for alarm reporting and automated troubleshooting and a reclocking circuit to ensure maximum signal quality at the output of the matrix.

**DIGITAL AUDIO MATRICES**

The UTAH-400 Large Routers are designed for ultra-wideband operation, allowing digital audio signals to be passed through the standard I/O paths. This allows system designers to handle audio and video signals in the same routing system. Digital audio I/O is unbalanced, carried on 75 Ohm BNC connectors.

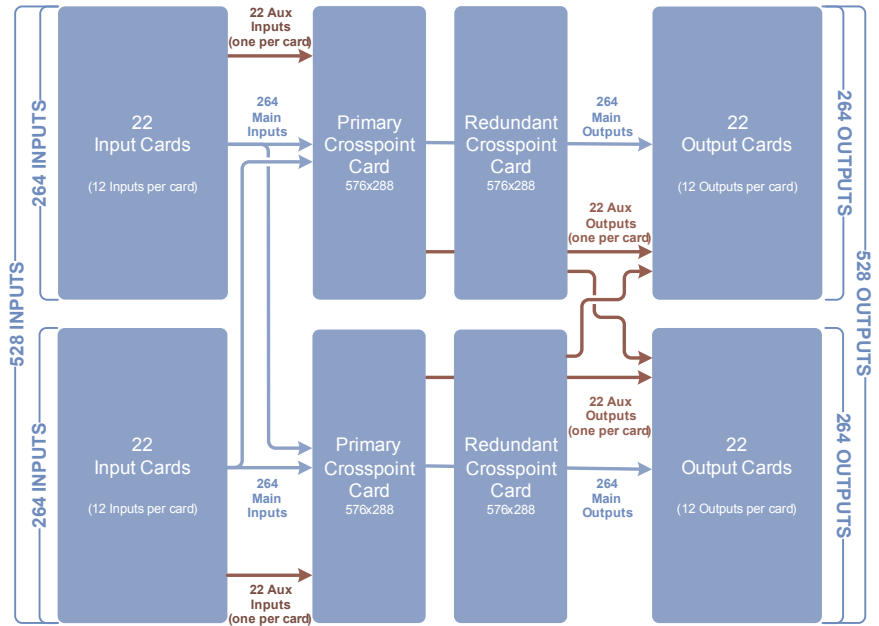
For systems where advanced audio functionality is required, the UTAH-400 TDM digital audio switchers are optimized for large system applications. Please see the data sheet for this product for full details.

**FIBER OPTIC I/O OPTION**

The UTAH-400 routers are available with optional Fiber I/O in place of the normal coax. Please consult the Fiber I/O Product Information Sheet for details.

**ADVANCED CONTROL FACILITIES**

The UTAH-400 offers a glimpse into the future of routing switcher design with its unique signal presence monitoring capability. By continuously monitoring the presence of digital bit streams at each input and each output, the system can support automatic rerouting, or "protection switching", to restore a signal feed that is interrupted by an internal or external fault.



## UTAH-400/528 Matrix Sizes up to 528x528

The UTAH-400/528 is the latest addition to the UTAH-400 family of digital routing switchers. Designed specifically to address the growing requirement for large-scale routing capacity in limited physical space, the new frame offers system designers the ability to place a 528x528 matrix in just 20 rack units of space, without the need for special cable/connector arrangements.

The UTAH-400/528 uses industry-standard 75 ohm BNC connectors for I/O, providing the highest connector density ever seen on a router of this size.

The UTAH-400/528 offers all of the UTAH-400 family's well-known advantages, including redundant crosspoints and power supplies, low power consumption for cooler, more reliable operation, and signal format flexibility – including the ability to handle the new 3Gbps progressive-scan HD signal formats.

Additional flexibility is provided with the option of replacing the coax I/O connections with 3Gbps fiber I/O in blocks as small as 12 inputs or 12 outputs.

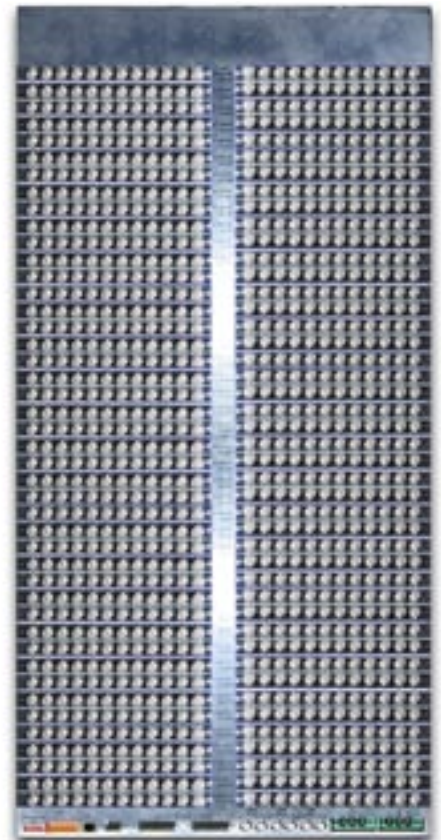
Each Crosspoint Board in the UTAH-400/528 feeds all of the router inputs to half of the router outputs, so two cards are required for a full 528 output matrix. There are additional crosspoint card slots to accept redundant crosspoint cards for one or both of the half-matrix blocks.

A unique feature of this architecture is that each crosspoint card actually has 576 inputs and 288 outputs, providing additional internal input-output combinations that can be used for a number of purposes. One use for these paths is to provide partial crosspoint redundancy by routing the additional outputs from each crosspoint card to one output on each output card fed by the other crosspoint card. In this way, internal crosspoint redundancy is provided for 44 outputs of the router without the need to install redundant crosspoint cards.

The UTAH-400/528 has a very advanced internal monitoring matrix that provides a full HD-capable output that is selected from any of the routers inputs or outputs. In addition, a separate output is provided as a H.264 streaming video output for monitoring the router over a network.

Power is provided to the matrix frame in the form of 48VDC from a pair of external rectifier units that provide full redundancy. In applications where 48VDC power is available from an external supply, the rectifiers are not needed.

The UTAH-400/528 is controlled by the Utah Scientific SC-4 control system, the industry's most powerful, flexible, and easy to use. The SC-4's extensive alarm management capabilities provide comprehensive real-time management of all of the UTAH-400/528's critical components, as well as loss-of-signal alarms to monitor the health of vital circuits on the inputs and outputs of the router.



## UTAH-400/XL

## Matrix Sizes up to 1056x1056

The UTAH-400/XL is the largest member of the UTAH-400 family of digital routing switchers. Designed specifically to address the growing requirement for large-scale routing capacity in limited physical space, the new frame offers system designers the ability to place a 1056x1056 matrix in just 40 rack units of space, without the need for special cable/connector arrangements.

The UTAH-400/XL uses industry-standard 75 ohm BNC connectors for I/O, providing the highest connector density ever seen on a router of this size.

The UTAH-400/XL offers all of the UTAH-400 family's well-known advantages, including redundancy options, low power consumption for cooler, more reliable operation, and signal format flexibility – including the ability to handle the new 3Gbps progressive-scan HD signal formats.

Additional flexibility is provided with the option of replacing the coax I/O connections with 3Gbps fiber I/O in blocks as small as 12 inputs or 12 outputs.

Each Crosspoint Board in the UTAH-400/XL feeds one half of the router inputs to one quarter of the router outputs, so eight cards are required for a full 1056 output matrix.

A unique feature of this architecture is that each crosspoint card actually has 576 inputs and 288 outputs, providing additional internal input-output combinations that can be used for a number of purposes. One use for these paths is to provide partial crosspoint redundancy by routing the additional outputs from the each crosspoint card to one output on each output card fed by the other crosspoint card. In this way, internal crosspoint redundancy is provided for 88 outputs of the router without the need to install redundant crosspoint cards.

The UTAH-400/XL has a very advanced internal monitoring matrix that provides a full HD-capable output that is selected from any of the routers inputs or outputs. In addition, a separate output is provided as a H.264 streaming video output for monitoring the router over a network.

Power is provided to the matrix frame in the form of 48VDC from a pair of external rectifier units that provide full redundancy. In applications where 48VDC power is available from an external supply, the rectifiers are not needed.

The UTAH-400/XL is controlled by the Utah Scientific SC-4 control system, the industry's most powerful, flexible, and easy to use. The SC-4's extensive alarm management capabilities provide comprehensive real-time management of all of the UTAH-400/XL's critical components, as well as loss-of-signal alarms to monitor the health of vital circuits on the inputs and outputs of the router.

