

X75™ HD/X75™ SD Multiple-Path Converter, Synchronizer...and More



X75™ HD / X75™ SD

X75™ HD/X75™ SD Does More With Less Equipment

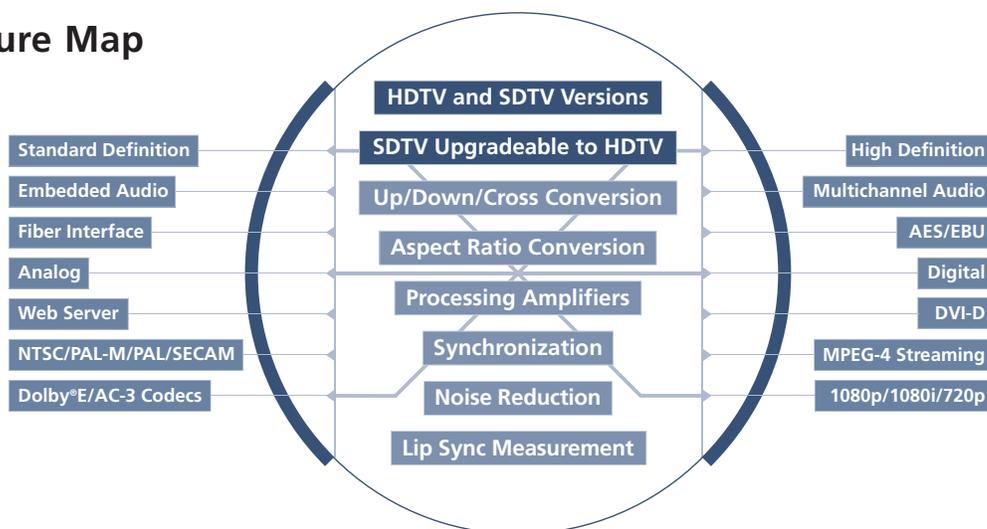
Why Select an X75™HD/SD?

High definition is becoming more and more prevalent, with the increasing popularity of wide screen and surround sound in home theater environments. As broadcast facilities move toward a fully digital or hybrid environment supporting both standard- and high-definition formats, content processing requirements increase significantly, as does the demand for more functionality in less space.

New Features in X75™

- Inputs and outputs for SD-SDI, 1.5Gb/s HD-SDI and 3.0Gb/s HD-SDI
- Color correction option
- Automatic input detection with simultaneous multiple-output format selection
- Embedding/de-embedding of audio and metadata for 8 AES, Dolby®E, Dolby® Digital
- Aspect ratio downstream signaling using AFD and WSS standards
- Fixed audio metadata insertion for upconversion
- Simultaneous logo and I-Wings — integrated side panel keying
- SD memory card for graphics storage
- Profanity avoidance delay option (up to 54 sec. for SD-SDI, up to 10 sec. for 1.5Gb/s HD-SDI)

X75™ Feature Map



Customers' Evolving Functionality Requirements Include:

- Up, down, cross and aspect ratio conversion with synchronization
- Advanced audio processing – for discrete analog, discrete digital AES, digital AES (compressed), and embedded audio uncompressed and compressed, which may require increased video delay for proper lip sync
- Multichannel audio for surround sound and multiple-language applications
- SNMP (Simple Network Management Protocol) for monitoring and setup of devices on an IP network
- The ability to take legacy analog signals into the digital domain using the highest quality conversions — especially before up-converting and compressing video signals
- Interfaces for high definition, including optical fiber and DVI-D
 - Optical fiber is required for long cable runs (>100m / 300ft.)
 - DVI is popular as an interface into LCD and plasma-type picture displays
- Intelligent input processing for alarming and auto-switchover — reducing downtime
- Increased use of metadata:
 - In today's facilities, there are many forms of "data about the essence" (or metadata) that travel along with the video and audio signals
 - Requirements vary — a transparent metadata pass-through may be required, or modification or replacement of the metadata
- Video-to-audio timing test and measurement to maintain lip sync

It's the Right Choice for Transitioning to Digital and HDTV

Combining HD and SD frame sync, video and audio processing capabilities and up/down/cross conversion, all in a space-saving 1RU package, the X75™ is the most comprehensive and versatile solution for broadcasters making the transition to DTV and HDTV.

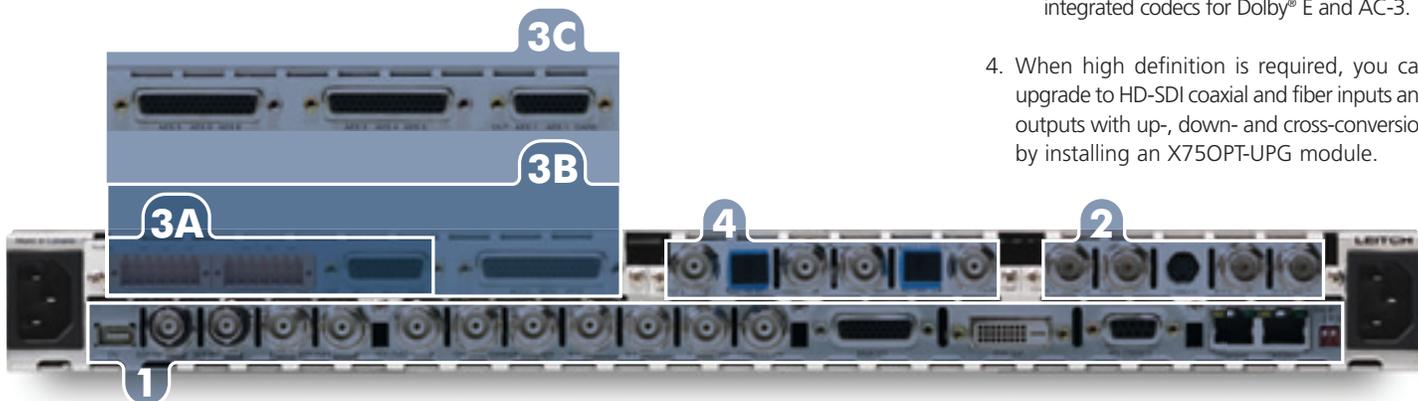
More Than Just a Synchronizer — More Functionality, Less Equipment

- AV synchronizer for analog and digital SDTV with simple upgrade for HDTV
- Analog-to-digital and digital-to-analog video conversion
- Up-, down- and cross-conversion with aspect ratio conversion
- Analog video processor with auto-switch time base corrector
- Auto-sensing, multistandard (PAL-B, PAL-M, NTSC/SECAM) for worldwide use
- Digital noise reduction for SDTV and HDTV
- Video level/color controls
- Optional A3D (Adaptive 3-Dimensional) color decoding
- Closed-captioned processing
- Video and audio test signal generators with lip sync measurement
- Audio embedding/de-embedding for both SDI and HD-SDI serial digital signals
- 8-, 16- or 32-channel audio processing (4, 8 or 16 stereo pairs)
- Optional integrated Dolby® E and AC-3 compression/de-compression
- Analog-to-digital and digital-to-analog audio conversion
- Surround sound audio processing
- Audio level control
- Audio limiter option
- Simple voice-over
- Redundant power supplies

SDTV to HDTV Upgradeability

The X75™ is fully upgradeable from standard definition to high definition in the field.

1. You can start out with a dual SDI frame synchronizer with analog composite (NTSC, PAL-B, PAL-M, SECAM) outputs. This combination is ideal for today's digital systems for standard-definition video processing.
2. For those who require analog video inputs, the A3D provides high-quality A to D conversion for analog composite, Betacam® and S-Video inputs.
3. If audio processing is required, there are three options to choose from:
 - a) The first is an eight-channel audio synchronizer with four-channel analog (two stereo pairs) and two AES inputs and outputs for typical stereo program processing.
 - b) The second audio option is a 16-channel audio synchronizer with four-channel analog (two stereo pairs) and five AES inputs and outputs, allowing even more audio capability for multiple language or surround sound applications using external audio codecs or the optional integrated codecs for Dolby® E and AC-3.
 - c) The third audio option is a 32-channel audio synchronizer with eight AES inputs and outputs, allowing another level of audio capability, which can also be used with external audio codecs or the optional integrated codecs for Dolby® E and AC-3.



4. When high definition is required, you can upgrade to HD-SDI coaxial and fiber inputs and outputs with up-, down- and cross-conversion by installing an X75OPT-UPG module.

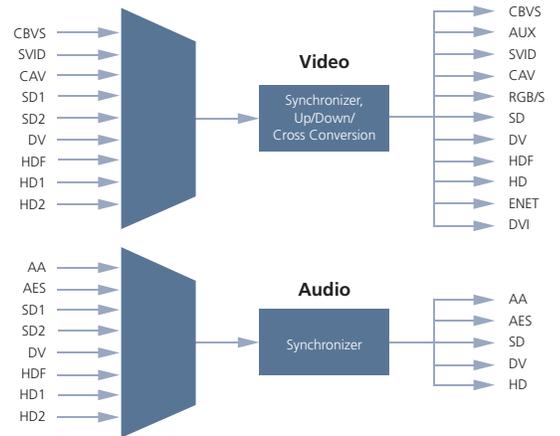
X75™ HD/X75™ SD

Select “Anything In” to “Everything Out”

Infinitely flexible I/O options for the X75™ with the HD upgrade provide up-, down- and cross-conversion from up to seven input video formats — more than any similar product currently on the market — to almost any output video format. Additionally, the X75™ features auto-detection of inputs with auto-changeover and user-selectable alarms to reduce downtime.

Video input format options include HDTV optical fiber, HD-SDI, analog composite/component (Betacam®) and Y/C (S-VHS/Hi-8) inputs. Dual SDI inputs are included. Ten broadcast-quality outputs of the same signals are provided, as well as RGBS, DVI-D, auxiliary PAL-B/PAL-M/SECAM/NTSC composite video outputs, and optional MPEG-4 streaming video and audio over Ethernet.

The X75™ front panel allows quick selection between multiple input devices all simultaneously linked through separate connections for each video input and output format.

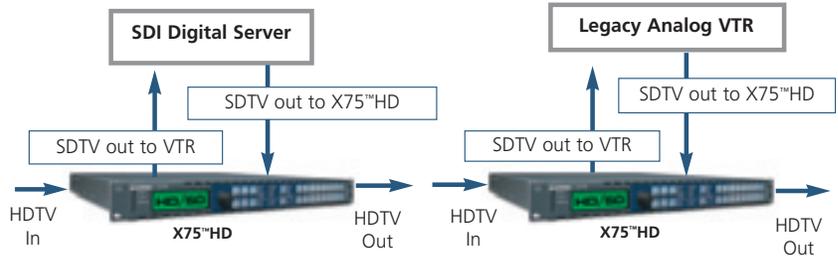


The X75™ is designed to convert from one video format to another and from one audio format to another. Both the audio and the video signals are synchronized to the input genlock reference signal. Video and audio adjustments can be carried out on the input signals. (HD version shown.)

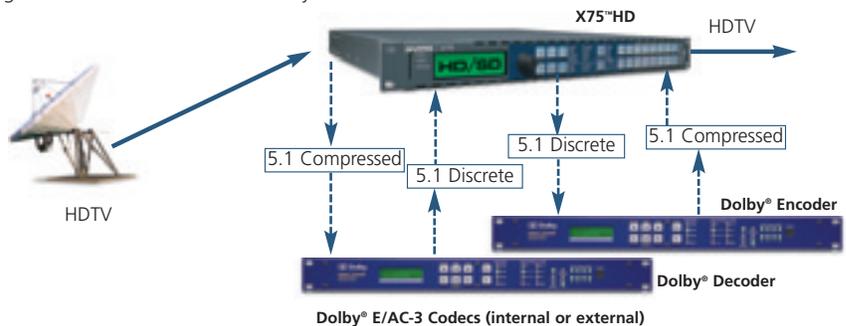
M-PATH™ Multiple-Path Processing Supports Bidirectional Processing

The HDTV upgrade enables superior functionality. Harris Corporation’s exclusive M-PATH™ feature provides multiple directional connectivity between analog, digital and high-definition tape transports or routing systems. Enabling simultaneous converter and frame synchronizer operation, M-PATH mode routes HDTV optical fiber or HD-SDI and converts and synchronizes directly to the SDTV analog and SDI video outputs, which feed the inputs of analog composite and component and digital tape machines and routing systems. The analog or digital outputs of tape machines or routing systems can be simultaneously connected to one of the synchronizer’s SDTV analog or digital inputs, where it can be processed and output via the HDTV optical fiber and HD-SDI port. Audio signals are handled in a similar fashion, with four, eight or sixteen channels of processing in each direction. Analog (two stereo pairs), AES/EBU (two, five or eight inputs and outputs) and embedded HD-SDI and SDI audio are also supported.

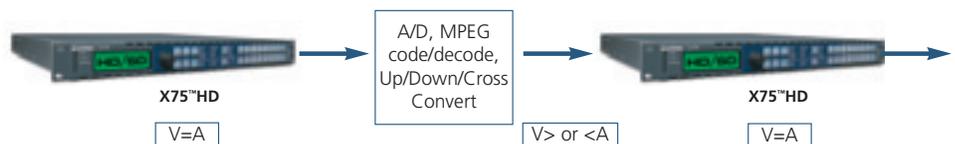
M-PATH™ — Simultaneous UP and DOWN Conversion Example



Compressed/Embedded Audio — Audio Processing for Discrete, Embedded and Compressed Audio using either Internal or External Dolby® codecs



Video to Audio Timing Measurement to Maintain Lip Sync — For ease of timing video relative to audio over large systems, the V2A video to audio timing tool allows for an off-line robust video and audio test signal that can be analyzed for any video to audio timing differences through analog/digital, MPEG code/decode and up/down/cross conversion processing.

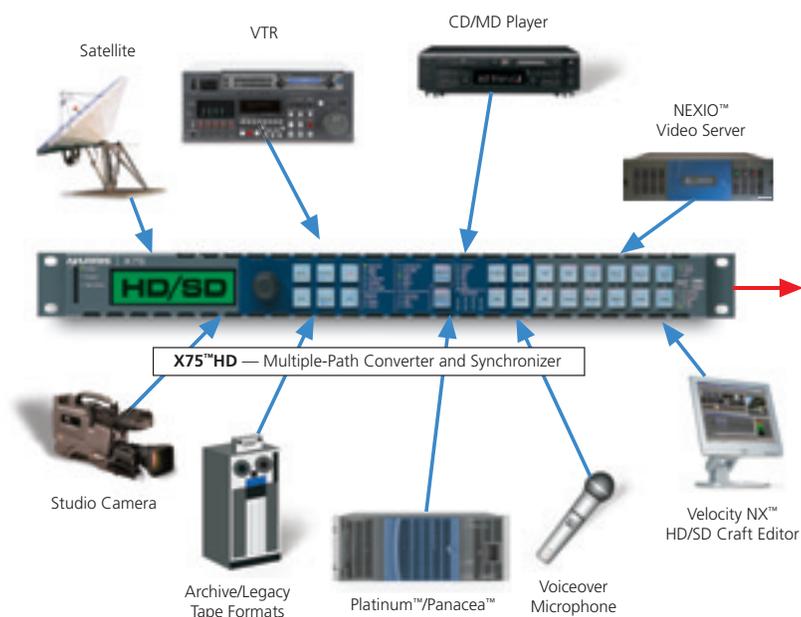


Limitless Applications

Expanding video processing to include “anything in” to “everything out” and M-PATH™ multiple-path and simulcast conversions, the X75™ is equally suited for use in analog, digital, or high-definition hybrid facilities.

The X75™ Provides a Simple Solution for Even the Most Complex Applications

For production and editing, the X75™ provides conversion to and from any signal type for HDTV productions. In news environments, it can time base correct any tape format — analog, digital or HDTV. For broadcast, the X75™ can perform upconversion for HD output, downconversion for monitoring/logging, and cross-conversion for programs that are recorded in other than the native format for the station. As a simple switcher, the X75™ can switch between any two inputs. In mobile environments, the X75 packs a multitude of features in a 1RU frame so that less equipment is used.

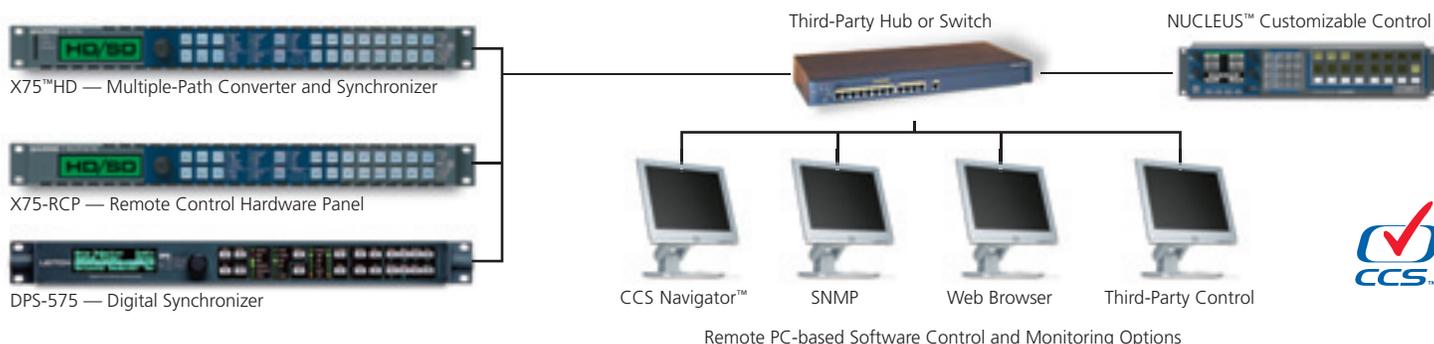


Effortless Control

Control and monitoring of signals passing through the X75™ is enabled using IP over Ethernet, and instant operator control from the local or remote control panels allows for easy manipulation of video and audio signals. Using two Ethernet ports per unit (one for control, monitoring and video

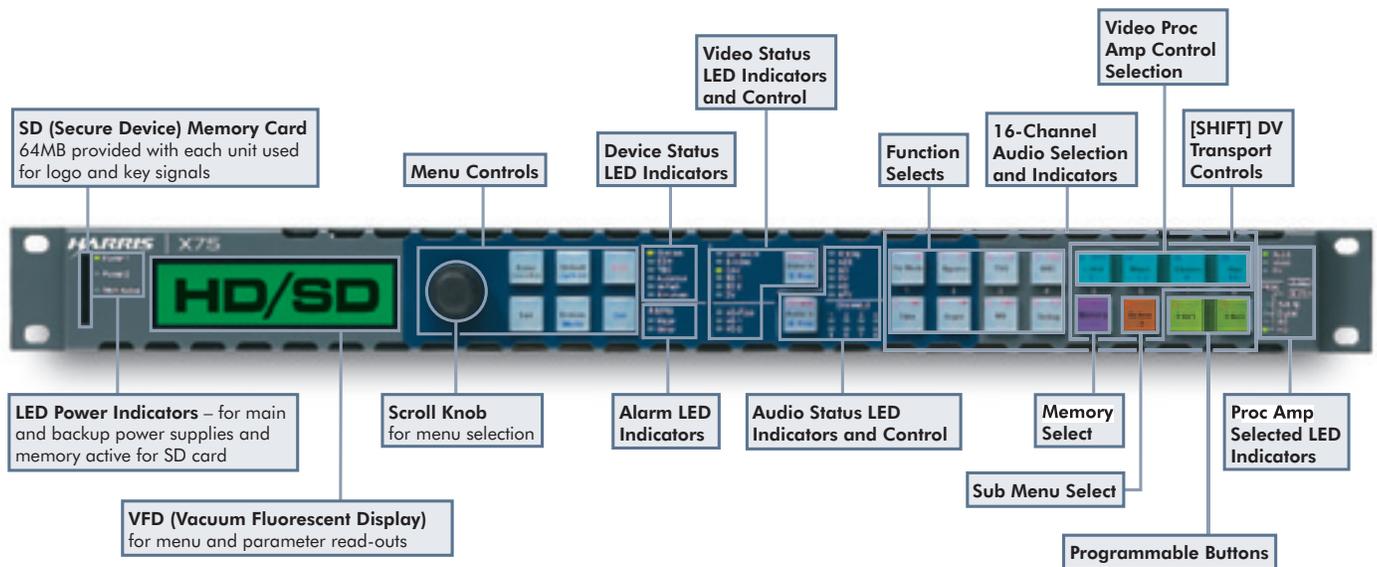
thumbnails, and one for video and audio streaming) makes PC control and monitoring over large networks entirely manageable. A built-in Web Server and optional SNMP are industry-standard means of controlling and monitoring the X75™ over Ethernet. The Harris® CCS Navigator™

software further enhances the remote control aspects of the X75™ for any application. The NUCLEUS™ network control panel provides complete user customization to tailor the control interface to the specific X75™ application.



X75™ HD/X75™ SD

Front Panel (or Remote Panel) Controls and Indicators



Expanded Audio Capability

With the addition of an optional 8-, 16- or 32-channel audio synchronizer module, the X75™ can provide either four, eight or sixteen stereo audio channels and video synchronization, supporting analog, AES/EBU digital and embedded SDI and HD-SDI audio I/O, including Dolby® E and AC-3 compression and decompression. All outputs are simultaneously active, which allows both analog and digital audio devices to be connected at the same time. Incoming stereo audio pairs can be selected from the analog, digital or embedded SDI or HD-SDI inputs. All audio channels dynamically track the internal delay of the video synchronizers whenever auto-track mode is enabled. Video and audio delay can be specified, ensuring proper lip sync regardless of the program source.

All audio parameters are controlled from an easy-to-use front panel menu. Four separate audio tone generators enable different frequency test tones to be applied to each channel for easy left/right channel identification. The optional Audio Limiter feature will provide improved audio output performance by limiting the hard clip effect and preventing audio distortion. Integrated Dolby® E and Dolby® Digital codecs can be added on as an option bringing even more functionality. When using the 16- or 32-channel audio option, five or eight AES inputs and outputs facilitate the use of external audio codecs simultaneously. This is ideal for all broadcasters, post production facilities, cable companies, Telcos and many other applications requiring added audio control.

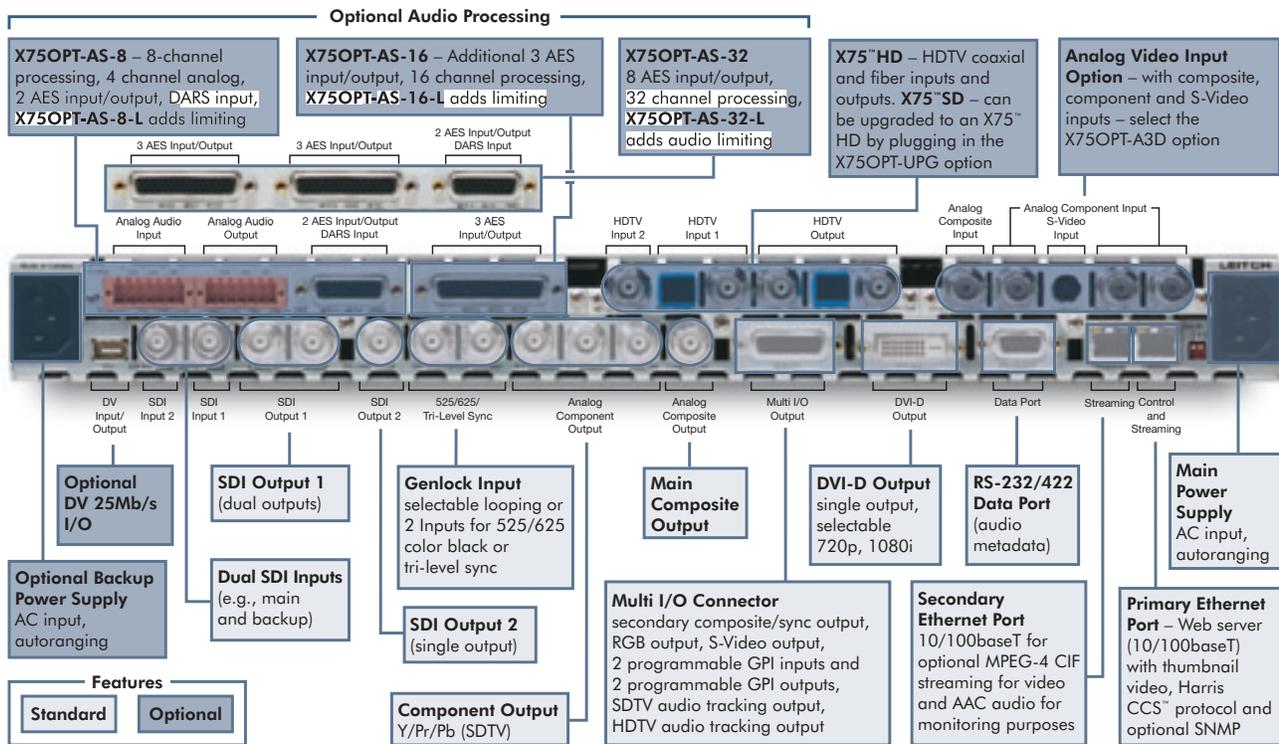
Analog Video is Still Here for A While

All X75™ models support analog video outputs. Composite (main and auxiliary), component Betacam® and RGB and S-Video outputs are built-in. For those who wish to convert analog composite to digital SDTV or HDTV, the most critical requirement for a component digital synchronizer is the ability to accurately decode composite NTSC and PAL signals. In that respect, the “A3D” optional, 12-bit, adaptive, three-dimensional comb filter decoder used in the X75™ offers unparalleled decoding ability.

PAL-M and SECAM Capability for Worldwide Use

Digital SDI and HD-SDI signals can be processed to PAL-M and SECAM outputs. Either of the analog video input options provides PAL-M and SECAM processing to all analog, digital and HDTV outputs.

Back Panel Connectivity



Three-Dimensional SDTV Digital Noise Reduction

With the optional Digital Noise Reduction feature, convenient front panel controls permit adjustments for impulse noise reduction, Gaussian random noise reduction, compression blocky-ness and mosquito artifact reduction, and sharpening and softening of images. Particularly effective for the reduction of satellite noise, the impulse noise reducer automatically detects impulse noise and applies the median filter when necessary. The recursive 3D directional filter removes Gaussian noise and compression artifacts, which include blocking artifacts and mosquito noise. The directional softening/sharpening filter can be used in various applications. For example, the softening filter can be used as a compression pre-filter to reduce mosquito noise. The sharpening filter can be used to enhance picture appearance. For MPEG pre-processing applications, this option provides entropy reduction prior to encoding.

Closed-Captioning Capabilities

Another unique feature broadcasters will appreciate is programmable, line-by-line, vertical interval bypass for analog, digital and HDTV signals. Closed Captioning (CC) in SDTV (EIA-608) on line 21 is transcoded to EIA-708 in VANC for HDTV when upconverting. Alternately, HDTV CC is transcoded to SDTV during down conversion. If DVB subtiting is required, the X75™ also processes video and DVB data during conversions.

Testing, Testing

The X75™ supports video test signals for analog and digital. If the high-definition upgrade is installed, high-definition video test signals are supported. If one of the audio options is installed, analog, digital (AES) and embedded test signals are supported. An option to facilitate timing of video and audio using two X75 converter/synchronizers in different locations (or a single X75™ in a “loop-back”) allows one to send a robust test signal for video

and audio and measure and correct for any relative changes in timing. This takes the guesswork out of lip sync correction.

Designed for a Changing World

With firmware updates easily installed in the field, the X75™ is able to stand the test of challenging times, making it a solid investment for a transitioning market.

Engineered for the Real World

The rugged, yet lightweight chassis is ideal for mobile use. The all-metal front panel provides expanded function buttons and additional status LEDs. A vacuum fluorescent graphical display (VFD) features variable sized fonts for readability, and can be dimmed to suit control room lighting conditions.

ONE Company for Workflow Solutions Throughout the Broadcast Chain

Harris is the ONE company delivering interoperable workflow solutions across the entire broadcast delivery chain — providing today’s broadcaster with a single, integrated approach to capitalize on the benefits of IT and mobile applications. By providing unparalleled interoperability across our product portfolio, Harris is able to offer customers integrated solutions that improve workflows, save money, enable new revenue streams and provide a migration path to emerging media business models. To meet the evolving needs of broadcast, distribution and entertainment businesses, Harris is the ONE answer for change.

Service And Support

At Harris, we are committed to customer service excellence. It is our goal to provide the highest level of support by applying a simple rule: We take ownership of helping our customers succeed. Our support teams consist of innovative technical experts who support all situations regarding product performance, integration and operational processing. We are adept at providing proven solutions, making workflows better and ensuring reliability of the product and system. At Harris, our experienced and dedicated teams stand ready to help you meet your goals for premium product performance, 100% up-time and reduced maintenance investment.

Warranty

Because we want to assure you that Harris stands beside its products and system solutions, our products carry a standard set of warranty services, which are competitive with — and in some cases outperform — others in the industry.

Service Packages

We offer value-add services that allow you to customize the level of services you need in meeting mission-critical performance levels. Our service package options offer many ways to upgrade your standard warranty by choosing the All-Inclusive OnePak, or by selecting individual services from our extensive portfolio. Our service and support advisors can assist in the selection of the individual services that best suit your requirements.

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