

# Teranex Express

## Teranex quality, now in Ultra HD!



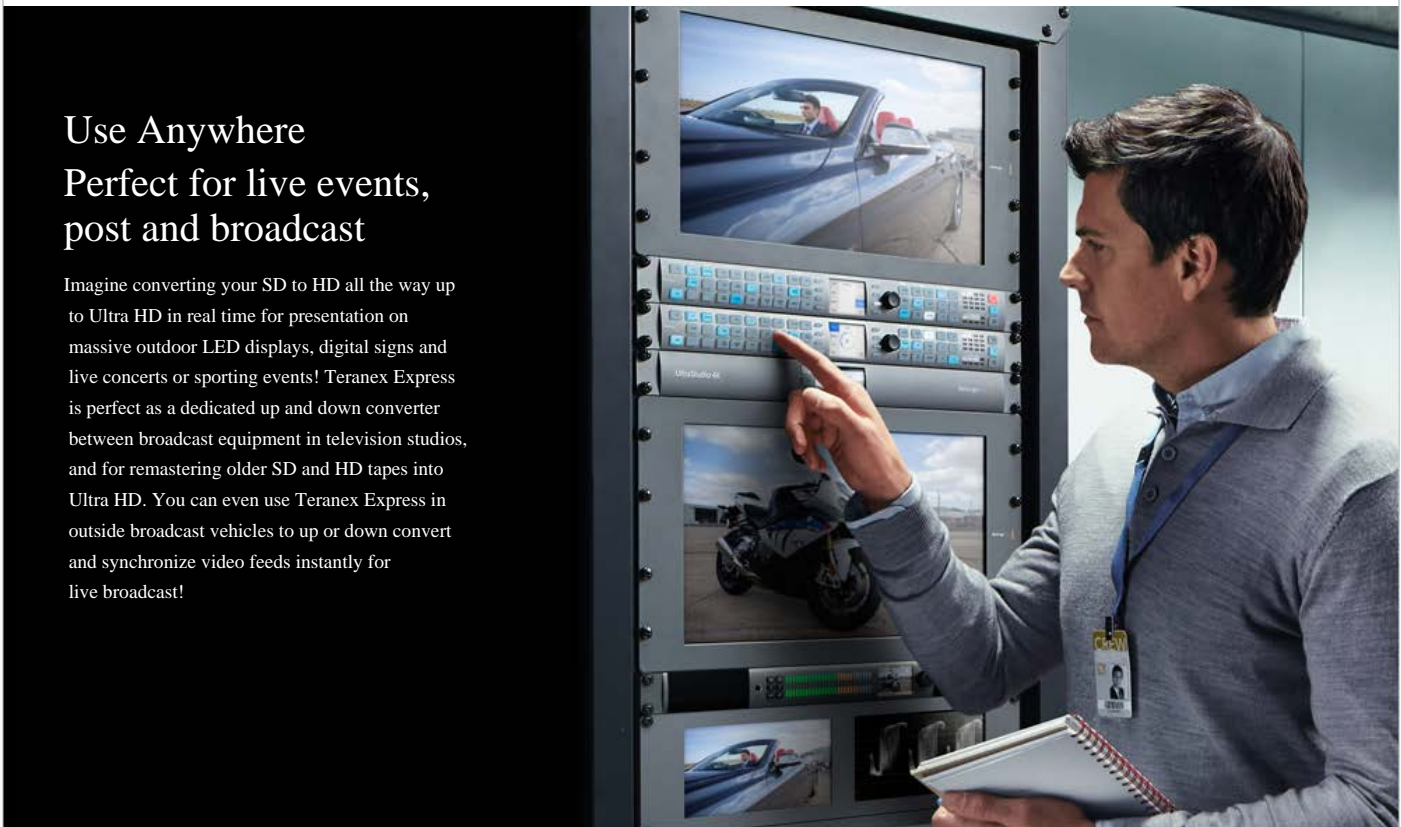
Introducing Teranex Express, the world's first real time SD, HD and Ultra HD broadcast up and down converter! Featuring advanced patented algorithms, Teranex Express gives you visually transparent quality

conversions and are mandated by major broadcasters and studios worldwide! You get an incredible 178 SD, HD and Ultra HD conversions in full 10-bit quality complete with audio, closed captions, timecode and more!

## Use Anywhere

### Perfect for live events, post and broadcast

Imagine converting your SD to HD all the way up to Ultra HD in real time for presentation on massive outdoor LED displays, digital signs and live concerts or sporting events! Teranex Express is perfect as a dedicated up and down converter between broadcast equipment in television studios, and for remastering older SD and HD tapes into Ultra HD. You can even use Teranex Express in outside broadcast vehicles to up or down convert and synchronize video feeds instantly for live broadcast!



## Familiar Design Advanced Teranex control panel



Featuring the familiar Teranex 2D and 3D control panel, Teranex Express has all of the controls you need at your fingertips. The built in LCD monitor lets you easily navigate menus and see source format and frame rate with live video, so you don't have to use an external monitor. With an elegant

machined metal front panel, its compact 1RU size and built in international power supply, Teranex Express not only looks great in your studio, but is also perfect for portable racks and outside broadcast vehicles.

## 178 Conversions

### Transparent conversions between SD, HD and Ultra HD

Teranex Express can perform an incredible 178 up/down conversions between SD, HD, and Ultra HD in real time. You can use Teranex Express for video conversions or to synchronize non genlocked, external feeds, or cameras into switchers for live production. Conversions retain timecode, include closed caption data, and always maintain perfect audio sync so your video is immediately ready for editing or broadcast.



All conversions include timecode and closed caption data

Teranex conversions maintain perfect audio sync

## Advanced Connections

### Broadcast quality connections for 24/7 reliability

Teranex Express features the most advanced broadcast connections, including the world's first 12G-SDI that is compatible with all of your existing SDI equipment. The genlock input lets you synchronize signals

between equipment and for larger studios, you can install an optional fiber optic module that lets you run video from up to 28 miles away.



## 12G-SDI

### High speed multi-rate SDI for SD, HD and Ultra HD

Teranex Express is the world's first broadcast converter to include multi-rate 12G-SDI connections. That means it can switch between 12G-SDI, 6G-SDI, 3G-SDI, HD-SDI and SD-SDI making it compatible with all of your existing SD, HD, and Ultra HD equipment! These connections can transfer data at an amazing 12 gigabits per second, making them fast enough to support progressive Ultra HD video at up to 60fps. That means Teranex Express will be able to support emerging formats when they become available, making it the most expandable and future proof solution you can buy!

12G-SDI	Rate: 12Gb/s Video: Ultra HD
6G-SDI	Rate: 6Gb/s Video: Ultra HD
3G-SDI	Rate: 2.970Gb/s Video: 1080p



## Teranex Quality

### Amazing detail, sharpness and clarity

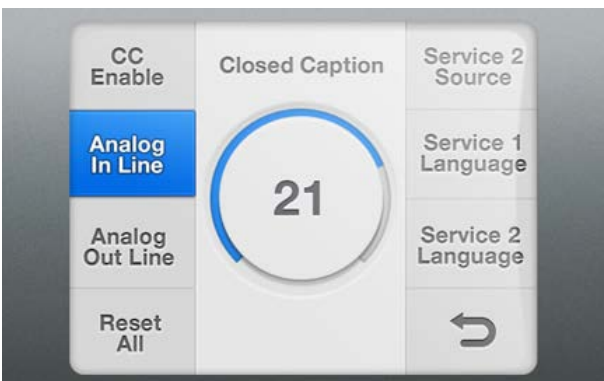
Teranex Express features the advanced processing technology developed and patented by Teranex, which allows instant calculations on thousands of pixels simultaneously! You get full 10 bit processing, extremely high quality de-interlace and new optical quality Ultra HD scaling algorithms that interpolate images in real time with amazing detail, sharpness and clarity without artifacts. That's why Teranex conversions are indistinguishable from the original source video!



## High Quality Deinterlace

### Patented PixelMotion technology and multi direction filtering

Teranex's proprietary and patented PixelMotion deinterlacing algorithms create perfect progressive frames for conversion by adjusting the aperture on a pixel by pixel basis. That means you get improved image quality because the vertical resolution is maintained. PixelMotion deinterlacing preserves source detail and, when combined with multi direction diagonal filters, eliminates jaggies on conversions so you get well defined edges and the sharpest images possible!



## Video Control

### Adjust color, aspect ratio and more!

Now you can quickly and easily find the tools you need to correct color, convert formats or change aspect ratio! Teranex Express features a logically designed front panel and soft menus so you can adjust luminance, saturation, hue, black level, R-Y/B-Y color difference, sharpness, and more with the built in proc amp controls. Teranex Express features an integrated LCD screen on the front panel so you can make adjustments with confidence during live broadcasts.

## Ancillary Data

### Multi channel audio, timecode and subtitles

Video includes a lot more than images, and Teranex supports conversion of up to 16 audio channels plus timecode and closed caption VANC data. Teranex Express is also compatible with Dolby encoded audio, so it never has to be decoded or re-encoded during up and down conversions. With Teranex Express your subtitles are always retained and both audio and timecode always stay in perfect sync with your video!

## Mandated By Broadcasters

### Teranex is asked for by name worldwide!

Teranex processing is so well known for quality that it has been mandated globally by many country's broadcasters for converting video. Because of its patented 10-bit processing algorithms and high quality deinterlacing, Teranex conversions look perfect, making distribution simple and problem free.



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## Teranex Express



**Teranex Express**  
The world's first 12G-SDI real time SD, HD and Ultra HD up and down converter with embedded audio, closed captions, timecode and more!

**\$1,395**

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## Teranex Express

The real time conversions for live, post and broadcast!



## Live Events

Up convert video for playback on 4K screens

Teranex Express features all new optical quality resizing algorithms. That means you get beautiful up conversions for displaying video on massive 4K screens. You can shoot audience reactions with HD cameras at your event and then use Teranex Express to up convert in real time! Teranex Express is

ideal for live events, such as concerts, conferences and worship services, where you need to convert different sources for output to projectors and HD displays!



## Post Conversions

Remaster SD and HD content to Ultra HD!

You never know what clients will walk through the door with, so need to be ready for anything. With support for 178 different real time up and down conversions, Teranex Express lets you convert between SD, HD, and Ultra HD for your clients without waiting! Patented PixelMotion

technology and multi-direction filtering means you get clean, sharp conversions that are visually indistinguishable from the source. Teranex Express is the fastest and highest quality way to convert between SD, HD and Ultra HD formats!



## Broadcast

Master in Ultra HD and broadcast in HD

Broadcasters can use Teranex Express to handle all of their SD and HD conversions now and in the future it's ready for Ultra HD! This means you can migrate from HD to Ultra HD as you integrate more equipment into your studio. And because Ultra HD and HD are the same aspect ratio, you don't

need to worry about reframing. Teranex conversions are renowned for preserving image quality and detail. That means you can up or down convert in realtime and get the highest quality broadcast video!







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# Teranex Express Design

## Broadcast quality and reliability you can use anywhere



Teranex Express features a machined aluminum design that not only looks great in your studio, but also provides exceptional durability for installation in broadcast trucks and portable racks. You get a compact 1 rack unit design

with built in LCD monitor, familiar Teranex control panel that’s easy to use and broadcast quality connections for 24/7 reliability.

## Control Panel

### Familiar Teranex controls

Teranex Express features an easy to use front panel which has been precisely designed to put all of the conversion options you need at your fingertips. The panel includes an integrated LCD screen for previewing video, and control buttons that light up to indicate the status of each conversion. And because Teranex Express shares the same front panel design as Teranex 2D and 3D, you’ll be able to start using it immediately!



## On Screen Menus

### Find settings and make live adjustments with confidence

Use the built in LCD screen to quickly find the conversion settings you’re looking for with its logically laid out, easy to use menus. You can use the soft buttons alongside the LCD screen and the control knob to fine tune settings and make precise adjustments with confidence, even during live events or broadcast.



## Broadcast Connections

### Reliable industry standard connections

Teranex Express includes SDI connections that are dual link so you can convert between single link 12G-SDI and dual link 6G-SDI. The built in SDI connections are also multi rate so they can switch between SD, HD, and Ultra HD television standards. The built in reference input gives you the

option to synchronize incoming video signals from cameras or other sources. There’s also an industry standard socket so you can install an optional optical fiber module which allows you to run video up to 28 miles using low-cost fiber optic cable.

## Power

### Integrated universal power supply

Teranex Express includes a built in 110/240V international power supply with a standard IEC connection so you can use it anywhere in the world. The international power supply is perfect for when broadcast trucks and mini racks used in different countries because all you need to do is source a local power cord and Teranex Express will switch voltage automatically.



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Conversions


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Quality conversions Broadcasters trust




Teranex Processors provide more conversions than any other solution! The incredible new Teranex Express lets you seamlessly up and down convert between SD, HD, and Ultra HD formats. That means you get incredibly


high quality realtime conversions that are virtually indistinguishable from the original source!

Deinterlacing

Patented PixelMotion algorithms




Teranex quality starts with one of the world’s highest quality and most precise de-interlacers. Teranex features proprietary and patented



PixelMotion de-interlacing algorithms so you get improved image quality by maintaining vertical resolution.

Image Scaling

All new optical quality resizing!



Teranex is known for legendary image quality and Teranex Express takes it even further. With all new real time, optical quality scaling algorithms that simulate an optical zoom, you get images with amazing detail and clarity that look better than ever before possible. When converting between SD, HD and Ultra HD, Teranex features sub-pixel processing and multi-directional diagonal filters so “jaggies” are eliminated and you get clean looking video!

Proc Amp Controls

Real time image correction

TV 21:9

21:9

16:9

16:9

4:3

4:3

TV 16:9

21:9

16:9

4:3

TV 4:3

21:9

16:9

4:3

Aspect Ratio

Intelligent 4:3 to 16:9 conversions

Teranex Express supports a wide range of fixed aspect ratios as well as color fill. That means you can convert between 4:3, 16:9 and more in real time!


Embedded Audio

Multiple channels in perfect sync

All Teranex Express conversions maintain and support up to 16 channels of embedded SDI audio that can be duplicated and routed while maintaining perfect sync! Levels can be adjusted during conversion and out of sync audio signals can be corrected with a delay of up to 1 second. Teranex Express also supports the pass through of Dolby audio during conversion so it never has to be decoded or re-encoded, and always remains in sync with your converted video.

Subtitles

Timecode



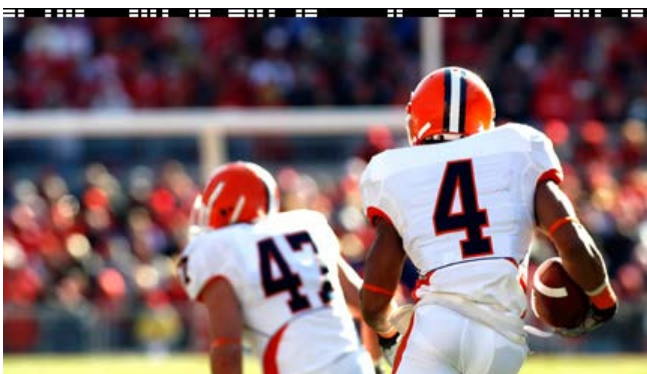
Retain close captioned data

Many countries mandate that broadcasters are now required to include closed captioning for the hearing impaired with all programming. Industry standard 608 and 708 closed caption data is preserved, passed through, and converted as needed for all SD, HD, and Ultra HD conversions.



Preserve or generate new timecode

Just like closed caption data, ATC/VITC timecode is also passed through and retained during the conversion process so source timecode is always preserved. You also have the option to jam sync or generate new timecode for sources that have inconsistent or unusable embedded timecode.



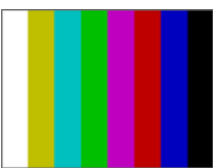
Test patterns  
The ultimate test signal generator!

When you need to calibrate traditional monitors, massive LED displays, or align digital projectors, the internal test pattern generator can display back burst and test patterns, including SMPTE color bars, grids, and resolution

charts. It's the ultimate test pattern generator for any SD, HD, and Ultra HD video format!



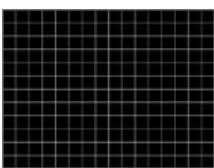
NTSC Bars



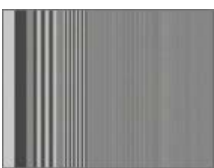
Color Bars



Black



Grid



Multi Burst

178 Conversions  
Incredible 178 up and down conversions

<div>↓IN</div> <div>OUT→</div>	480i59.94	576i50	720p50	720p59.94	1080p23.98	1080Psf23.98	1080p24	1080Psf24	1080p25	1080sf25	1080p29.97	1080Psf29.97	1080p50	1080i50	1080p59.94	1080i59.94	2K1080p23.98	2K1080Psf23.98	2K1080p24	2K1080Psf24	UHD 2160p23.98	UHD 2160p24	UHD 2160p25	UHD 2160p29.97	UHD 2160p50	UHD 2160p59.94
480i59.94	✓			✓							✓	✓			✓	✓								✓		✓
576i50		✓	✓						✓	✓			✓	✓									✓		✓	
720p50		✓	✓						✓	✓			✓	✓									✓		✓	
720p59.94	✓			✓							✓	✓			✓	✓								✓		✓
720p60																										
1080p23.98					✓	✓											✓	✓			✓					
1080Psf23.98					✓	✓											✓	✓			✓					
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1080p25		✓	✓						✓	✓			✓	✓									✓			✓
1080Psf25		✓	✓						✓	✓			✓	✓									✓			✓
1080p29.97	✓			✓							✓	✓			✓	✓								✓		✓
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1080sf30																										
1080p30																										
1080p50		✓	✓						✓	✓			✓	✓									✓			✓
1080i50		✓	✓						✓	✓			✓	✓									✓			✓
1080p59.94	✓			✓							✓	✓			✓	✓								✓		✓
1080i59.94	✓			✓							✓	✓			✓	✓								✓		✓
1080i60																										
1080p60																										
2K1080Psf23.98					✓	✓											✓	✓			✓					
2K1080p23.98					✓	✓											✓	✓			✓					
2K1080p24							✓	✓											✓	✓		✓				
2K1080Psf24							✓	✓											✓	✓		✓				
UHD 2160p23.98					✓	✓											✓	✓			✓					
UHD 2160p24							✓	✓											✓	✓		✓				
UHD 2160p25		✓	✓						✓	✓			✓	✓									✓			✓
UHD 2160p29.97	✓			✓							✓	✓			✓	✓								✓		✓
UHD 2160p50		✓	✓						✓	✓			✓	✓									✓			✓
UHD 2160p59.94	✓			✓							✓	✓			✓	✓								✓		✓

All Conversions are 10-bit, 4:2:2 YUV colorspace

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Teranex Express



Teranex Express  
The world's first 12G-SDI real time SD, HD and Ultra HD up and down converter with embedded audio, closed captions, timecode and more!

\$1,395

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# Teranex Express

## Future proof technology



Teranex Express features the latest technology and innovative features to give you the highest quality realtime SD, HD and Ultra HD conversions! Inside you'll find advanced technology like 12G-SDI to handle everything from SD all the way up to emerging formats like Ultra HD 60p! There's

optical fiber for running video over long distances, high quality 10-bit image processing, and support for 16 channels of embedded audio, subtitles, AFD/WSS data and more. Teranex Express packs all of this technology in a rugged 1RU design that can be used virtually anywhere!

## 12G-SDI Switchable multi rate up to Ultra HD 60P!



12G-SDI provides an incredible 12 gigabits per second of throughput, that's about 8 times faster than HD-SDI, and sets a new standard for SDI connectivity! Just like 6G-SDI, it's compatible with all of your SD, HD, and Ultra HD equipment. You can output Ultra HD over a single cable and

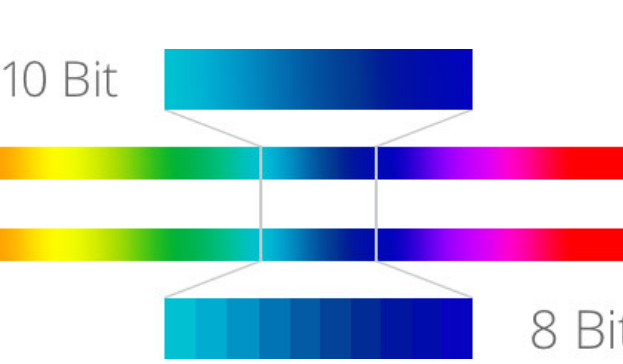
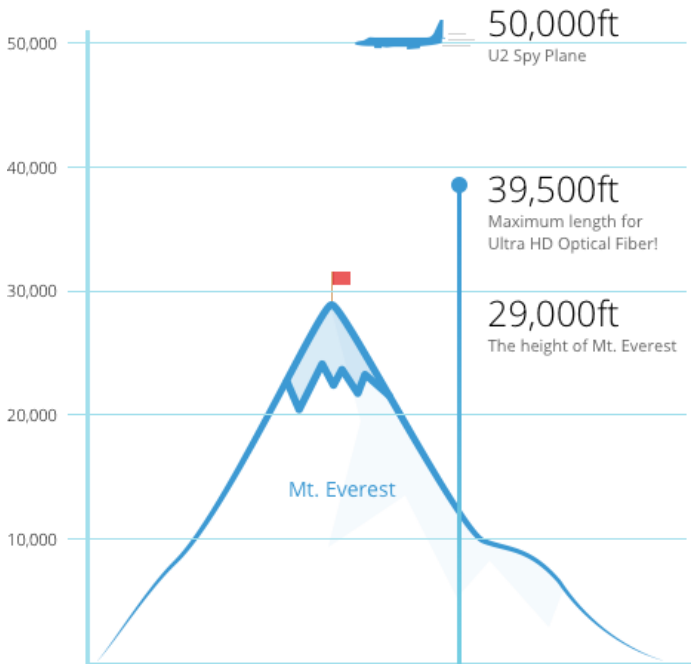
because of the increased bandwidth, 12G-SDI will also support new emerging formats, like high frame rate Ultra HD 60P, as they become available!

## Optical Fiber

### Lossless long distance video connections

Traditional copper cabling is bulky, expensive, and can only be used in lengths of 300' or less for video. Fiber optic cable is readily available, cost effective, and can carry video up to an amazing 28 miles without any signal loss! If you're in a large facility or working on location with cameras distributed in the field, Teranex Express can connect to them via optical fiber. Depending on whether you're doing SD, HD, or Ultra HD determines the maximum length of your fiber run:

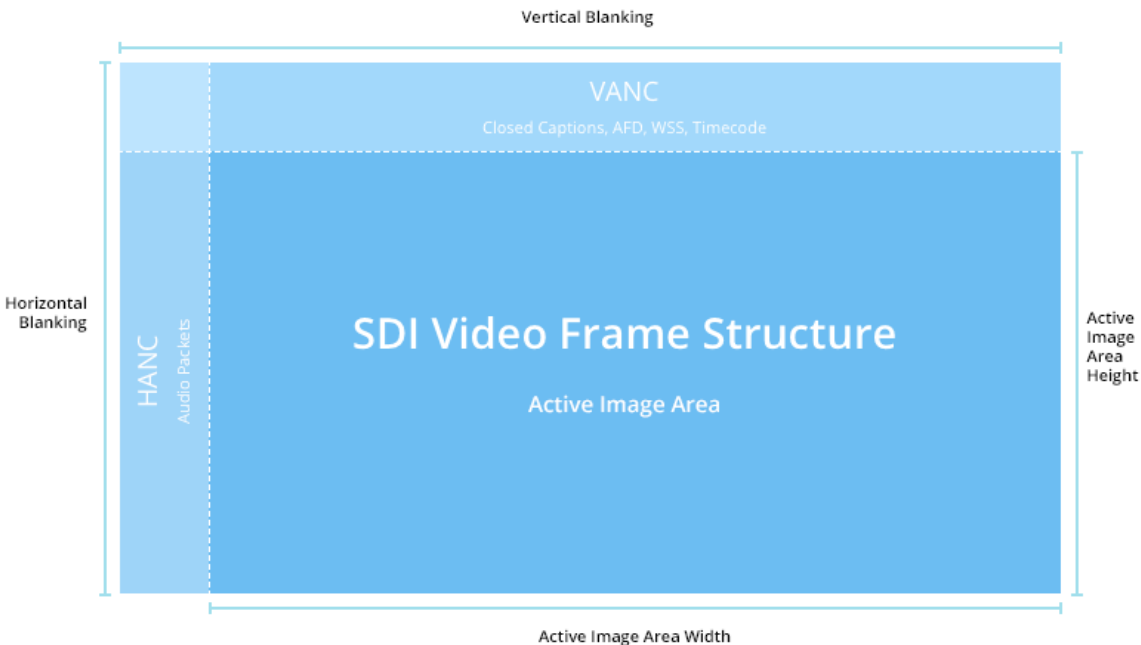
- Standard Definition = 27.8 miles
- High Definition (720p, 1080i, 1080p) = 15.5 miles
- Ultra HD = 7.5 miles



## 10-Bit Quality

### High precision image processing

To get the highest picture quality, video processing operations like image scaling, color correction, compositing and other effects need to be processed using 10-bit precision. That's because when you manipulate video with 8-bit precision, each time you render or change the image, precision can be truncated back to 8-bits, which can introduce color "banding" and other unwanted artifacts. With 10-bit image processing, you get four times the color resolution, resulting in significantly higher quality images.



## Closed Caption

Closed Caption data is now mandatory in many countries for traditional broadcast distribution and, increasingly, distribution of content over the internet. Captions are usually stored as ancillary data embedded into an SDI stream. Teranex Express understands the different types of Closed Caption data found in SD and HD video streams, and will preserve and convert it into the proper CEA-608 or CEA-708 format for your output

## Embedded audio

SDI signals can contain up to sixteen mono channels (or 8 stereo pairs) of 48 kHz 24-bit audio. SDI signals with embedded audio can be run over traditional coaxial copper cable, or over optical fiber cable. That means you get perfectly synchronized, professional quality audio embedded with the video over a single cable that can be patched, routed, or distributed around your facility!

## AFD/WSS

Active Format Distribution (AFD) and Widescreen Signaling (WSS) are a standard set of codes that carry information about a video signal's aspect ratio and active picture characteristics. AFD is often used in the generation of WSS and tells your display how to best present the video that it is receiving. Teranex Express preserves AFD and WSS information during the conversion process, so that means your



video.

screen will automatically select the correct aspect ratio for video playback.

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# Teranex Express

## Technical Specifications

### Description

Teranex Express, is the world's first real time SD, HD and Ultra HD broadcast up and down converter! Featuring advanced patented algorithms, Teranex Express gives you the visually transparent quality conversions and are mandated by major broadcasters and studios worldwide! You get an incredible 178 SD, HD and Ultra HD up and down conversions in full 10-bit quality complete with embedded audio, closed captions, timecode and more!

### Price

\$1,395

### Connections

#### SDI Video Input

1x (IN A) – 10-bit SD, HD, 2K, 3 Gb/s HD, 6 Gb/s and 12 Gb/s UHD switchable.  
1x (IN B) – 10-bit SD, HD, 2K, 3 Gb/s HD and 6 Gb/s UHD switchable. Usable as dual link input for 4:2:2 3G or 6G UHD

#### SDI Video Loop

1x (IN A Loop) – Reclocked, 10-bit SD, HD, 2K, 3 Gb/s HD, 6 Gb/s and 12 Gb/s UHD switchable  
1x (IN B Loop) – Reclocked, 10-bit SD, HD, 2K, 3 Gb/s HD, 6 Gb/s UHD switchable.

#### SDI Video Output

1x (OUT A) – 10-bit SD, HD, 2K, 3 Gb/s HD, 6 Gb/s and 12 Gb/s UHD switchable  
1x (OUT B) – 10-bit SD, HD, 2K, 3 Gb/s HD and 6 Gb/s UHD switchable. Usable as dual link output for 4:2:2 3G or 6G UHD

#### SDI Audio Input

16 channels in SD, HD, 2K and UltraHD

#### SDI Audio Output

16 channels in SD, HD, 2K and UltraHD

#### Dolby Support Built-In

Dolby AC-3 pass through in all conversions.  
Dolby E pass through except during video frame rate conversions.

#### Multi Rate Support

SDI connections are switchable between standard definition, high definition and UltraHD. SDI switches between 270 Mb/s standard definition SDI, 1.5 Gb/s HD-SDI and 2K SDI, 3 Gb/s HD, 6 and 12 Gb/s UltraHD

#### Sync Input

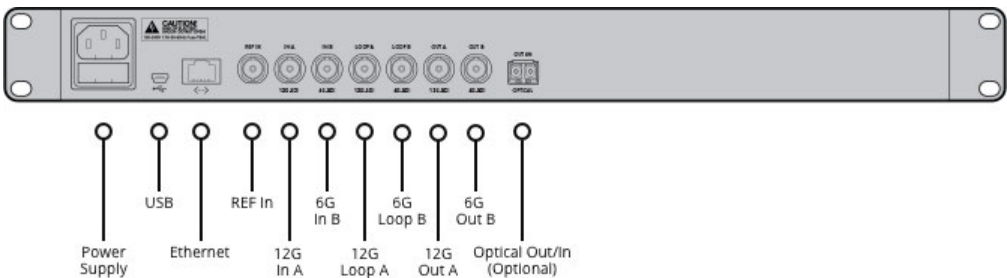
Blackburst in SD or TriSync HD

#### Computer Interface

USB 2.0 mini B port for software updates and configuration.

#### Processor Interface

Illuminated pushbuttons, status LEDs and LCD with easy to use onscreen menus.



### Video Standards

#### SD Format Support

625/25 PAL, 525/29.97 NTSC

#### HD Format Support

720p50, 720p59.94, 1080PsF23.98, 1080p23.98, 1080PsF24, 1080p24, 1080PsF25, 1080p25, 1080PsF29.97, 1080p29.97, 1080i50, 1080p50, 1080i59.94 and 1080p59.94

#### 2K Format Support

2048 x 1080PsF23.98, 2048 x 1080p23.98, 2048 x 1080PsF24 and 2048 x 1080p24, 2048 x 1080PsF25 and 2048 x 1080p25, 2048 x 1080PsF29.97 and 2048 x 1080p29.97

#### 4K Format Support

3840 x 2160p23.98/24/25/29.97/50/59.94

#### SDI Compliance

SMPTE 259M, SMPTE 292M, SMPTE 296M, SMPTE 372M, SMPTE 425M

#### SDI Metadata Support

VITC/ATC support, SMPTE 12M. Video indexing support including WSS, RP186 and AFD, SMPTE 2016. Closed captioning support for conversions to and from 608 and 708, SMPTE 334M.

#### Audio Sampling

Television standard sample rate of 48 kHz and 24-bit

#### Video Sampling

4:2:2 SDI

#### Color Precision

10-bit

#### Color Space

REC 601, REC 709

#### SDI Format Support

525 NTSC, 625 PAL, 720HD, 1080HD, 2K 2048 x 1080 and 4K 3840 x 2160 switchable

### Processing

#### Aspect Ratio Conversion

Real time fixed aspect ratio conversions

#### Real Time Video Processing

Includes color correction and proc amp control

#### Format Conversion

Real time up conversion, down conversion, cross conversion

#### Colorspace Conversion

Hardware based real time

### Software

#### Software Control

Software control utility included free for changing settings via Windows 7 and Mac OS X

#### Internal Software Upgrade

Automatically upgrades when new software is connected via USB 2.0

### Operating Systems



Mac OS X 10.7 Lion or later; Mac OS X 10.8 Mountain Lion or later



Windows 7 or Windows 8

### Power Requirements

#### Power Supply

1 x built-in international AC power supply with IEC C14 inlet. 100-240V, 50-60Hz

### Physical Specifications



3.2 lb

### Environmental Specifications

#### Operating Temperature

5° to 50° C (41° to 122° F)

#### Storage Temperature

-20° to 45° C (-4° to 113° F)

#### Relative Humidity

0% to 90% non-condensing

### What's Included in the Box

Teranex Express

### Warranty

#### Product Warranty

12 Month Limited Manufacturer's Warranty

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