

TuffServ® 220 Multichannel Video Recorder

AMPEX

The TuffServ® 220 Video Recorder (TS 220) records, encodes, reproduces and streams SD & HD-SDI video with embedded metadata.

The TS 220 and the TuffServ 222¹ are video systems designed to support simultaneous recording, reproduction, and streaming of both high definition and standard definition video. The two products differ only in the number of supported video channels.

Metadata

Advanced stabilized imaging turrets embed metadata into the HD-SDI signal, using standards developed by SMPTE (“KLV”) and the Motion Imagery Standards Board; in operation, the approach is similar to that used for closed captioning. The TS 220 extracts this metadata from the uncompressed stream, formats it, and embeds it in the compressed video for recording, reproduction and streaming. With embedded KLV metadata,

permanent fixed text overlays

showing the position and orientation of the turret are eliminated, since that data can be displayed by the playback device as and when required; without “burned-in” text overlays, so more of the picture is visible for analysis. The TS 220 reproduces video with metadata, so supports applications where “live” and “playback” video are handled identically.

Features

- **HD-SDI Video Input/ Output, with MISB / STANAG 4609 Metadata support**
- **Resolutions up to 720p60 & 1080p30 (incl. 50Hz variants)**
- **H.264/MPEG-4 AVC Part 10 Video Encoding**
- **Simultaneous Real-Time Reproduction / Playback and Video Streaming**
- **Records to RASP: a rugged USB-attached SSD module**
- **“Loop through” Video Monitoring**
- **Rugged, light-weight with MIL-STD connectors**

Intelligent Video Encoding

Each video channel is H.264-encoded, for compatibility and efficient use of network bandwidth and media usage. The encoder is user configurable, to support use cases for high-quality recording for ground-based exploitation, low bandwidth streaming through a data link, or operator-in-the loop applications.

Flexible Media Server

While recording, the TS 220 can play back audio and video, both as a reproduction of the format it was recorded in (either an HD-SDI or an RS-170 signal) and as a network stream. The system can also be used as a rugged general purpose file server (limits apply). For example the RASP module can be used to transport planning data such as

maps to the vehicle before the mission, and retrieve the video from it afterwards.

Media Fit For Purpose

The TS 220 records a removable, rugged advanced storage pack (RASP). Using USB 3.0 for universal connectivity, the RASP is designed for use on flight lines and where media dependability is of paramount importance. RASP storage is available with standard and extended endurance in various capacities up to 480GB and more.



¹ The two systems differ only in the number of input and output channels supported
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TuffServ 220 with Base Mount Option

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The TS 220/222 family is the primary system in the TuffServ Video Server family, which also includes the baseline TuffServ 100v. The major “step-up” features of the TS 220/222 family are the multiple input and output video interfaces, and the ability to simultaneously record and reproduce video. The overall product line has extendible hardware options for:

- Number of video inputs and outputs
- Video encoding methods
- Solid-state media storage options
- Recorder control mechanisms
- Mounting methods
- Customer configuration requirements

All models in the TuffServ video server family employ the same command protocol, allowing straightforward integration with on-board



systems. Additionally, rugged hardware control panels are available that provide a simple and convenient mechanism to control the TuffServ systems.

The TuffServ video servers are tested with industry-leading EO/IR turrets, including models from L-3 WESCAM[†] and FLIR Systems[†]. The encoded video (and metadata) is compatible with standard video players such as Microsoft Media Player[†] and VideoLAN's VLC[†], as well as with MISB-compliant (“KLV aware”) display and exploitation applications, including those from PAR Government[†] and General Dynamics Mediaware[†].



Video	
Video Input	1 x HD-SDI (SMPTE 292M) 2 x Composite NTSC/PAL (Option for 4x [‡])
Metadata	KLV (SMPTE 291M, MISB, STANAG 4609)
Video Formats	SMPTE 296M: 1280x720@(50p/60p) SMPTE 274M: 1920x1080@(25p/30p) Analog RS-170A/PAL: 480i59.94, 576i50
Video Output	1 x HD-SDI (SMPTE 292M) 1 x Composite Video NTSC/PAL
Video Encoding	H.264/MPEG-4 Part 10 AVC
Video Streaming	MPEG-2 Transport Stream
Media	
Ampex RASP	64GB to 480GB and more [‡] , standard and enhanced endurance
Audio	
Channels	One stereo (two mono)
Compression	MPEG 1 Layer II (mp2)
I/O Connections	
HD Video	1 x Input, 1 x Output
Ethernet	Standard: 1 x 10/100/1000Base-T Option for 2 x 10/100/1000Base-T [‡]
General I/O	
Analog Video	2 x Input, 1 x Output (4 x Input possible [‡])
Audio	1 x Stereo (2 mono) Input, 1 x Stereo Output
Serial Ports	2 x configurable RS-232, RS-422, RS-485 Option for 4 x configurable RS-232/422/485 [‡]
MIL-STD-1553B	Option for 1 or 2 redundant channels [‡]
GPIO	8 lines [‡]
Control Ethernet	1 x 100Base-T (control only) [‡]
Size, Weight, and Power	
Power	28VDC, 24W Idle, 28W Loaded
Weight	3.0Kg (6.6lbs)
Size (W x H x D)	122mm x 140mm x 203mm 4.8in x 5.5in x 8.0in (excluding mounting)
Connectors	Glenair Series 805, MIL-STD-38999 Series III BNC (SMPTE 292M)
Mounting	Base plate or Panel mount
Environmental Operating Conditions	
Temperature	-40°C to 55°C (Panel mount) -40°C to 71°C (Base mount on cooled surface)
Power Supply	MIL-STD-704F
Shock /Vibration	MIL-STD-810F
EMI	MIL-STD-461E

[†] Use of other company names and marks is for information only, and does not imply endorsement by those companies

[‡] Contact Ampex Contract Department for availability of this feature or option

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