

MAXX-2020HD

Reference Recorder



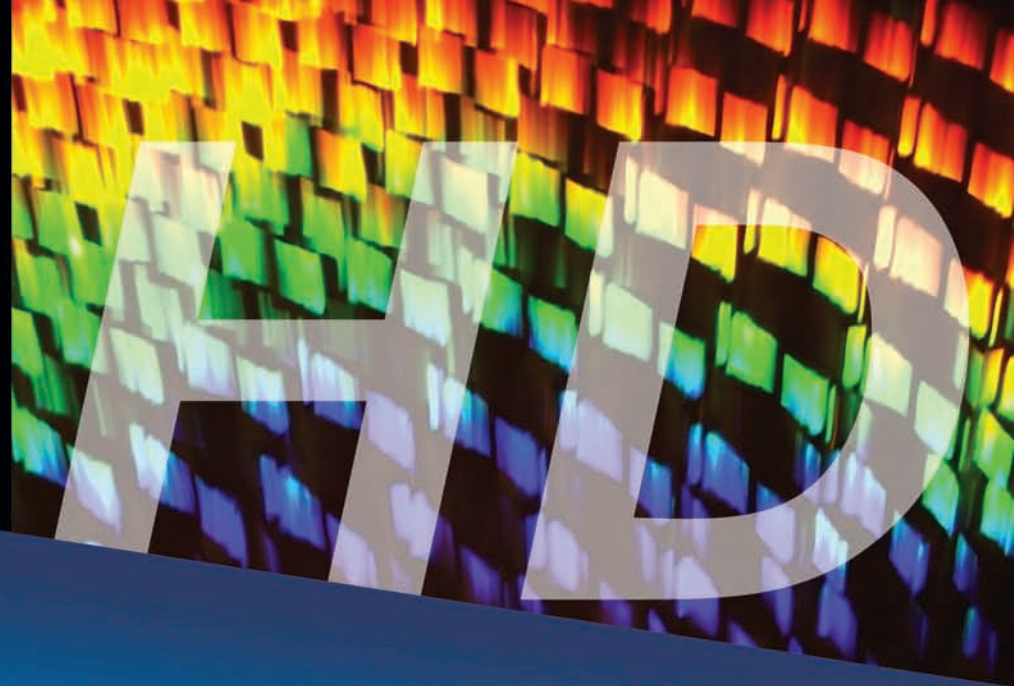
This time, what you shoot is what you'll see.



360 Systems®

# MAXX-2020HD

This time, what you shoot is what you'll see. The Maxx 2020 HD is one of the first machines to record or play two HD streams at once, making it a first-quality choice for 3-D or multi-screen presentations.



**The 2020 Recorder simplifies connection** to displays with its extra HDMI outputs, in addition to the standard HD-SDI ports.





# MAXX-2020HD Reference Recorder

Two Channels | Zero Compression | Images to 2K, 12-bit 4:4:4

## Two Uncompressed HD Channels for 3-D and Multi-Screen

360 Systems' new 2020 Reference Recorder provides truly lossless recording and playback in most professional HD formats. It's one of the first machines able to record or play two HD streams at once, making it a first choice for 3-D or multi-screen presentations. The 2020 also provides instant random access to full-resolution uncompressed scenes.

The 2020 Reference Recorder doesn't encode images; it records the raster just as it is, bit-for-bit®. Any color space or bit depth can be used—with 8, 10, or 12 bits—limited only by the 1.5G or 3G digital stream.

Two unrelated HD streams can also be played at once—ideal for multi-screen displays, playback while recording, or simultaneous review. Each channel can even play sequences, built with our sophisticated playlist utility.

The 2020 Reference Recorder is also a 3G recorder, capable of 12-bit X'Y'Z' 2K at 24P, or 12-bit R'G'B' 1080i at 60. At 3G, the 2020

is single channel, yet two units can be synchronized with frame-accurate precision.

## Tools for Production

The 2020 Recorder makes connection to displays easy with extra HDMI outputs, in addition to HD-SDI ports. Common 3D formats, such as interleave, side-by-side, R-L flip, etc. can be selected on the GUI. Also included are nine-pin serial ports, GPI inputs, LTC and ancillary time code, plus VANC data, making the 2020 useful in many different work environments.

A clear GUI with familiar transport control keys gives full control of each channel. Key features include head and tail marking, trimming, segmenting, slow-motion, looping and pause.

Playlisting software builds run-downs of any length. Of particular value for exhibitions, each output can run with its own playlist. With the 2020's trimming, playlisting and time code tools, this may be all that's needed for a complex presentation.

## FEATURES

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Two channels for 3-D recording

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Up to 12-bit, 4:4:4, 2K

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True lossless image storage

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1.5G and 3G high definition

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8, 10 and 12-bit resolution

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23.98, 24, 25 29.97, 50, 59.94 rates

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8 audio channels per stream

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Slow-motion playback

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Trimming and playlisting

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Remote workstation software

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2.4 TB internal storage

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Low-cost external magazines

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HDMI monitor outputs

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2 channel LTC

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9-pin serial control

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# MAXX-2020HD Reference Recorder

True Lossless Image Storage

1.5G and 3G High Definition

8 Audio Channels Per Stream

## Storage Options

The 2020 Recorder's SAS technology creates a safe, low-cost way to store and transport video content. It contains 2.4 TB of internal disk storage, and can record from 2 to 10 hours of HD, depending on the format selected.

External SAS drive arrays are easily attached for almost unlimited storage. Drives are available in rack enclosures or compact portable magazines; each is instantly ready when connected.

Many projects do not require large external storage; small magazines with 300 GB drives are available off-the-shelf, and make a cost effective choice for video acquisition.

The accompanying time chart shows the storage time available from the four internal 600 GB drives. These figures can also be used to estimate running time of external drive systems.



# 2020 Video Format Chart



Transport	Image Formats	Color Sampling-Resolution	Time in Hours 2.4TB	Frames (Fields)/Second
1.5G - HD-SDI SMPTE 292	1080P	4:2:2 - Y'C <sub>B</sub> C <sub>R</sub> ' - 10 Bit	3.89 - 4.86	23.98, 24, 25, 29.97, 30
		4:4:4 - R'G'B' - 8 Bit		23.98, 24, 25
	1080PsF	4:2:2 - Y'C <sub>B</sub> C <sub>R</sub> ' - 10 Bit	3.89 - 4.86	23.98, 24, 25, 29.97, 30
		4:4:4 - R'G'B' - 8 Bit		23.98, 24, 25
1080i	4:2:2 - Y'C <sub>B</sub> C <sub>R</sub> ' - 10 Bit	3.89 - 4.67	25 (50); 29.97 (59.94); 30 (60)	
720P	4:2:2 - Y'C <sub>B</sub> C <sub>R</sub> ' - 10 Bit 4:4:4 - R'G'B' - 8 Bit	4.37 - 10.83	23.98, 24, 25, 29.97, 30, 50, 59.94, 60	
3D 1.5G HD-SDI 2x SMPTE 292	All 1.5G image formats above are supported.			
3G HD-SDI SMPTE 424	2KP / 2KPsF 2048 x1080	4:4:4 - X'Y'Z' - 12 Bit 4:4:4 - R'G'B' - 12 Bit	2.54	23.98, 24, 25, 29.97, 30
	1080P	4:2:2 - Y'C <sub>B</sub> C <sub>R</sub> ' - 10 Bit	1.95 - 2.34	50, 59.94, 60
		4:2:2 - Y'C <sub>B</sub> C <sub>R</sub> ' - 12 Bit 4:4:4 - Y'C <sub>B</sub> C <sub>R</sub> ' - 10 / 12 Bit 4:4:4 - R'G'B' - 10 / 12 Bit	2.16 - 4.04	23.98, 24, 25, 29.97, 30
		4:2:2 - Y'C <sub>B</sub> C <sub>R</sub> ' - 12 Bit 4:4:4 - Y'C <sub>B</sub> C <sub>R</sub> ' - 10 / 12 Bit 4:4:4 - R'G'B' - 10 / 12 Bit	2.16 - 4.04	23.98, 24, 25, 29.97, 30
	1080i	4:2:2 - Y'C <sub>B</sub> C <sub>R</sub> ' - 12 Bit 4:4:4 - Y'C <sub>B</sub> C <sub>R</sub> ' - 10 / 12 Bit 4:4:4 - R'G'B' - 10 / 12 Bit	2.16 - 3.88	25 (50); 29.97 (59.94); 30 (60)
	720P	4:4:4 - Y'C <sub>B</sub> C <sub>R</sub> ' - 10 Bit 4:4:4 - R'G'B' - 10 Bit	2.91 - 7.24	23.98, 24, 25, 29.97, 30, 50, 59.94, 60

# Tools for Professional Filmmakers.



## MAXX-2020 HD Delivers More

- 2 HD-SDI inputs
- 2 HD-SDI outputs
- 2 HDMI monitor outputs
- 8 channels embedded audio
- 8 Channels AES/EBU audio\*
- 4 Analog audio I/O ports
- 9-pin control inputs
- 6 GPI inputs/outputs
- 2 LTC inputs/outputs
- External SAS drive port
- Genlock input
- Keyboard/monitor/mouse
- Gig-E file transfer port



\*optional accessory

## 24-Bit Surround Audio 8 Channels per video stream, in every format.

### Technical excellence counts.

- Superior 24-bit performance
- Sonic quality through design
- 36 years in professional audio



### Versatile Production Audio

The 2020 Recorder provides eight SDI-embedded audio channels; two of these are also available as +4 balanced analog audio inputs and outputs. The optional DXP-3 multi-channel AES/EBU module provides 8-channels of discrete digital audio. Transparent playback of Dolby® encoded formats is assured by 360 Systems' Bit-for-Bit design.

### Available Models

The 2020 Reference Recorder can be outfitted with external SAS storage options to suit almost any application. For more information on the new 2020 Reference Recorder, visit our web site at [www.360Systems.com](http://www.360Systems.com). Or e-mail us at [Movies@360Systems.com](mailto:Movies@360Systems.com). Our sales staff is always available at (818) 991-0360.

### FEATURES

Embedded audio

AES/EBU digital audio

Redundant power

Gold XLR-3 connectors

Transparent to Dolby® audio



DXP-3 Multi-Channel AES/EBU Audio Module

● ● ● Contact us today to discuss your next project. Please visit our web site at [www.360systems.com](http://www.360systems.com).  
E-mail us at [Movies@360Systems.com](mailto:Movies@360Systems.com) or call us direct at +1 (818) 991-0360

*360 Systems*

# MAXX-2020HD™ Reference Recorder

## TECHNICAL SPECIFICATIONS

*We understand reliability. Our thirty-eight years of experience and 30,000 hard disk products, in service around the world, make 360 Systems a proven leader. We deliver leading-edge technology for exceptional performance, and at a price that makes sense.*

### VIDEO

<b>Video Input</b>	2 Channel HD-SDI record/play or 1 channel 3G-SDI
<b>Video Outputs</b>	2 Channels HD-SDI or 1 channel 3G-SDI
<b>Monitor Output</b>	2 Channels HDMI (Rev 1.3 c) No HDCP
<b>3-D HDMI Monitor Formats</b>	Interleaved or side-by-side
<b>Video Encoding</b>	Uncompressed, Bit-for-Bit
<b>Bit Depths</b>	8, 10, 12
<b>Frame/Field Rates</b>	23.98, 24, 25, 29.97, 30, 59.94, 60. P, PsF, or interlaced
<b>Channel Formats</b>	2 1.5G channels or 1 3G channel. Two 2020 units may be synchronized.

### AUDIO

<b>Embedded Audio</b>	8 channels per video stream
<b>Analog Audio Input/Outputs (per video channel)</b>	2 channels, +4 dBu balanced, XLR-3 connectors.
<b>Optional DXP-3 Multi-Channel AES/EBU Module</b>	8 channels AES/EBU audio input and output per video channel, XLR3

### PROGRAM STORAGE

<b>Internal Storage</b>	(4) 15,000 RPM, 600 GB enterprise grade SAS drives
<b>Internal Storage Capacity</b>	1.2TB, RAID-5 or RAID-0
<b>Drive Exchange</b>	Front panel access
<b>External Storage</b>	Mini-SAS-attached (option)
<b>External Drive Capacity</b>	Per user requirement

### NETWORK CONNECTIVITY

<b>File import/export</b>	Gigabit Ethernet
<b>Remote Workstation</b>	Windows® application included
<b>Diagnostic Logs</b>	Ethernet transfer

### MISCELLANEOUS

<b>Log color space decoding</b>	Future software release
<b>Slow Motion Playback</b>	Up to 1x real time
<b>Playlisting Features</b>	Drag-&-drop list building with Pause, Skip, Hold, Next, Jump
<b>9-pin Serial Control</b>	VDCP, BWV, Odetics
<b>GPI</b>	6 inputs, 6 outputs
<b>Genlock Input</b>	59.94: SMPTE 170M; 50 Hz: ITU-R BT.470; Sync to SDI input at any rate.
<b>Fault Monitoring LEDs</b>	Front Panel LEDs: Power, Fans, Genlock, System, RAID status
<b>Time Code</b>	2 LTC inputs, 2 LTC outputs, plus ancillary time code
<b>VANC</b>	All VANC reproduced bit-for-bit

### POWER AND MECHANICAL

<b>Power</b>	100-240 V, 50/60 Hz, 300 W
<b>Mechanical</b>	2-RU (3.5 x 19 x 18.5"). Weight: 28 lbs net
<b>Country of Origin</b>	U.S.A.



For more information on 360 Systems' MAXX-2020HD Reference Recorder, please visit our web site or call us direct.

[www.360systems.com](http://www.360systems.com)  
(818) 991-0360