

BLACK MAGIC RECORDER

UltraStudio 4K Extreme 3



Product Technical Specifications

UltraStudio 4K Extreme 3 is the world's most advanced capture and playback solution for PCI Express and Thunderbolt computers! It features incredibly fast 40Gb/s Thunderbolt 3, advanced 12G-SDI and HDMI 2.0 connections for working at up to 60 frames per second with deep color, 12-bit RGB, support for HDR workflows via HDMI 2.0a and extremely large 4K frame sizes. Featuring the widest range of analog and digital connections, UltraStudio 4K Extreme 3 is compatible with virtually any camera, deck, router or display. There's even an extremely powerful hardware encoder built-in that supports realtime H.265 encoding!

Connections

SDI Video Inputs

2 x 12Gb/s and 2 x 6Gb/s SD/HD/2K/4K. Supports single/dual/quad link 4:2:2/4:4:4. 2D/3D switchable.

SDI Video Outputs

2 x 12Gb/s and 2 x 6Gb/s SD/HD/2K/4K. Supports single/dual/quad link 4:2:2/4:4:4. 2D/3D switchable.

SDI Rates

270Mb, 1.5G, 3G, 6G, 12G.

Optical SDI

Supports 2 optional SMPTE modules.

SDI Video Loop

4 x reclocked SD/HD/2K/4K linked to corresponding inputs.

SDI Video Repeated Outputs

2 x 12Gb/s and 2 x 6Gb/s SD/HD/2K/4K. Supports single/dual/quad link 4:2:2/4:4:4. 2D/3D switchable.

Analog Video Inputs

1 x Component YUV on 3 BNCs, 1 x composite NTSC/PAL on 1 BNC.

Analog Video Outputs

1 x Component YUV on 3 BNCs, 1 x composite NTSC/PAL on 1 BNC.

Analog Audio Inputs

4 Channels of professional balanced analog audio via XLR connectors and 2 channels of consumer unbalanced via RCA connectors.

Analog Audio Outputs

4 Channels of professional balanced analog audio via XLR connectors.

Optical Fiber Inputs/Outputs (Optional)

2 x 12Gb/s Optical Fiber.

AES/EBU Audio Inputs

2 Channels unbalanced with sample rate converter on BNC connector.

AES/EBU Audio Outputs

2 Channels unbalanced on BNC connector.

SDI Audio Inputs

16 Channels embedded in SD/HD/2K/4K.

SDI Audio Outputs

16 Channels embedded in SD/HD/2K/4K.

HDMI Video Inputs

HDMI 2.0 type A connector with support for 2160p60

HDMI Video Outputs

HDMI 2.0 type A connector with support for 2160p60

HDMI Audio Inputs

8 Channels embedded in SD/HD/4K.

HDMI Audio Outputs

8 Channels embedded in SD/HD/4K.

Mic Input

1 x 48V microphone input via XLR connector. Phantom Power switchable via software control.

Timecode Input

1 x XLR Input.

Timecode Output

1 x XLR Output.

AVC-Intra, AVCHD, Canon XF MPEG2, Digital SLR, DV-NTSC, DV-PAL, DVCPRO50, DVCPROHD, DPX, HDV, HEVC, XDCAM EX, XDCAM HD, XDCAM HD422, DNxHR & DNxHD, Apple ProRes 4444, Apple ProRes 422 HQ, Apple ProRes 422, Apple ProRes 422 LT, Apple ProRes 422 Proxy, Uncompressed 8-bit 4:2:2, Uncompressed 10-bit 4:2:2, Uncompressed 10-bit 4:4:4.

BLACK MAGIC RECORDER

UltraStudio 4K Mini



UltraStudio 4K Mini is a portable Thunderbolt 3 capture and playback solution packed with the latest broadcast technology! You get broadcast quality 8 and 10-bit high dynamic range capture in all formats up to 4K DCI at 60p, and 12-bit high dynamic range capture in all formats up to 4K DCI at 30p. Plus, the built in SD card reader lets you mount camera media directly on your computer so you can start editing immediately!

Connections

SDI Video Inputs

1

SDI Video Outputs

2 x program out, 1 x loop out.

SDI Rates

270Mb, 1.5G, 3G, 6G, 12G.

Analog Video Inputs

Component YUV or Composite NTSC/PAL. Component is switchable between SD and HD.

Analog Audio Inputs

2 channels of professional balanced analog audio with 1/4 inch Jack connectors.

Analog Audio Outputs

2 channels of professional balanced analog audio with 1/4 inch Jack connectors.

SDI Audio Inputs

16 Channels embedded in SD/HD/2K/UHD/4K.

SDI Audio Outputs

16 Channels embedded in SD/HD/2K/UHD/4K.

HDMI 2.0b Video Inputs

1

HDMI 2.0b Video Outputs

1

HDMI Audio Inputs

8 Channels embedded in SD/HD/UHD/4K.

HDMI Audio Outputs

8 Channels embedded in SD/HD/UHD/4K.

Mic Input

1 x XLR microphone input. 48V Phantom Power switchable via software control.

Sync Input

Tri-Sync or Black Burst.

Device Control

Sony™ compatible RS-422 deck control port. Serial ports TxRx direction reversible under software control.

USB

1 x USB-C 3.1 Gen 1 (up to 5 Gb/s).

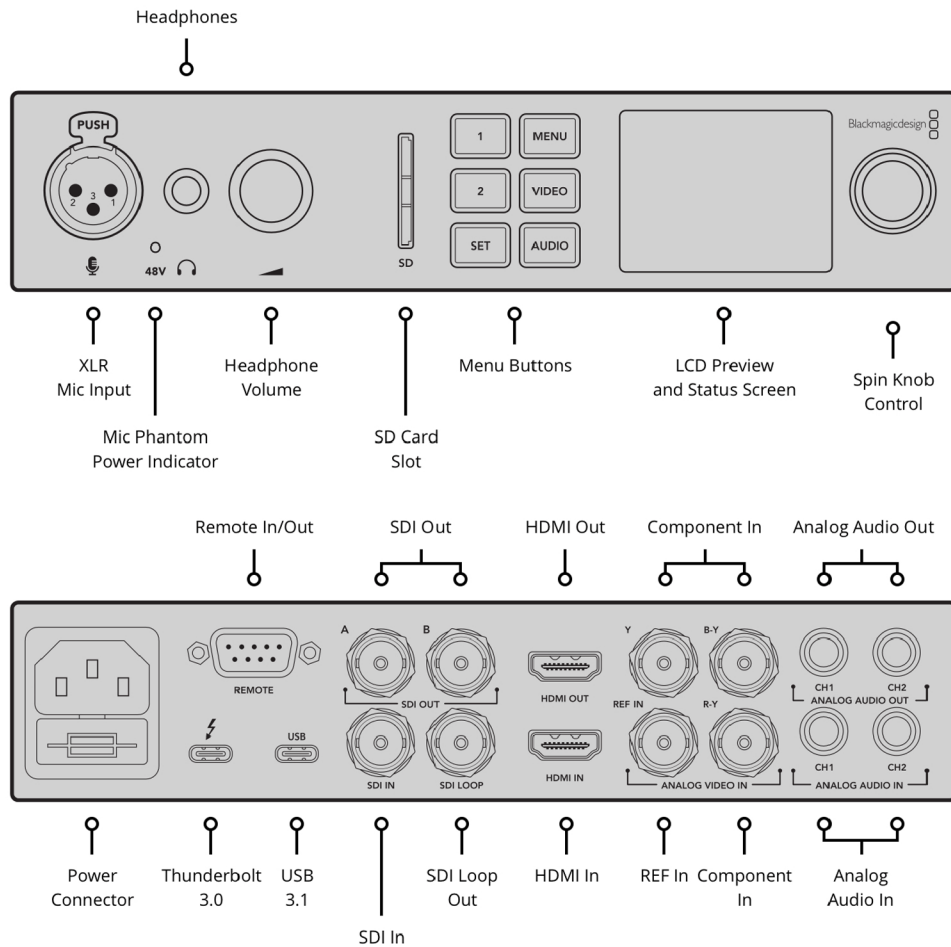
SD Card Reader

UHS-I and UHS-II compatible.

Computer Interface

Thunderbolt™ 3 (Mac OS, Windows and Linux) with 45W host charging capability.

BLACK MAGIC RECORDER



Supported Codecs

AVC-Intra, AVCHD, Canon XF MPEG2, Digital SLR, DV-NTSC, DV-PAL, DVCPRO50, DVCPROHD, DPX, HDV, HEVC, XDCAM EX, XDCAM HD, XDCAM HD422, DNxHR & DNxHD, Apple ProRes 4444, Apple ProRes 422 HQ, Apple ProRes 422, Apple ProRes LT, Apple ProRes 422 Proxy, Uncompressed 8-bit 4:2:2, Uncompressed 10-bit 4:2:2, Uncompressed 10-bit 4:4:4.

Software

Software Included

DaVinci Resolve, Media Express, Disk Speed Test, LiveKey, Blackmagic Desktop Video Utility and Blackmagic driver on Mac OS and Windows. Media Express, Blackmagic Desktop Video Utility and Blackmagic driver on Linux.

Internal Software Upgrade

Firmware built into software driver. Software driver loads upgrades at system start or via updater software.

BLACK MAGIC RECORDER

UltraStudio HD Mini



UltraStudio HD Mini features professional broadcast quality connections that include 3G-SDI, analog YUV and composite NTSC/PAL video inputs, along with a reference input. There are also two 1/4" audio connections for analog audio input that work with balanced and HiFi sources. In addition, UltraStudio HD Mini can remote control professional broadcast decks using the built in RS-422 connection. For output, you get dual link 3G-SDI with fill and key, and an HDMI connection for monitoring video with a big screen television!

Connections

SDI Video Inputs

1 x 3Gb/s SD/HD switchable.

SDI Video Outputs

2 x 3Gb/s SD/HD switchable, supports fill and key.

SDI Rates

270Mb, 1.5G, 3G

Optical SDI

None

HDMI Video Inputs

None

HDMI Video Outputs

1 x HDMI 1.4b type A connector.

Analog Video Inputs

Y, B-Y, R-Y/NTSC/PAL.

Analog Video Outputs

None

Analog Audio Inputs

2 x 1/4 inch jack connectors for balanced and unbalanced analog audio.

Analog Audio Outputs

None, embedded audio only.

SDI Audio Inputs

16 Channels embedded in SD and HD.

SDI Audio Outputs

16 Channels embedded in SD and HD.

HDMI Audio Outputs

2 Channels embedded in SD and HD.

Timecode Connection

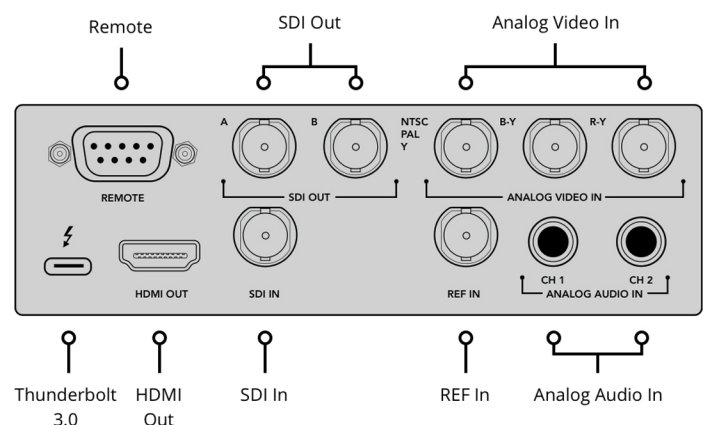
None. RP-188 only.

Reference Input

Tri-Sync or Black Burst.



Mini Switches
and USB





BLACK MAGIC RECORDER

Supported Codecs

AVC-Intra, AVCHD, Canon XF MPEG2, Digital SLR, DV-NTSC, DV-PAL, DVCPRO50, DVCPROHD, DPX, HDV, XDCAM EX, XDCAM HD, XDCAM HD422, DNxHD, DNxHR, Apple ProRes 4444, Apple ProRes 422 HQ, Apple ProRes 422, Apple ProRes LT, Apple ProRes 422 Proxy, Uncompressed 8-bit 4:2:2, Uncompressed 10-bit 4:2:2.

Software

Software Included

Media Express, Disk Speed Test, LiveKey, Blackmagic Desktop Video Utility and Blackmagic driver on Mac and Windows. Media Express, Blackmagic Desktop Video Utility and Blackmagic driver on Linux.

Internal Software Upgrade

Firmware built into software driver. Software driver loads upgrades at system start or via updater software.

Video Standards

SD Video Standards

525i59.94 NTSC, 625i50 PAL

HD Video Standards

720p50, 720p59.94, 720p60
1080p23.98, 1080p24, 1080p25,
1080p29.97, 1080p30, 1080p50,
1080p59.94, 1080p60
1080PsF23.98, 1080PsF24,
1080PsF25, 1080PsF29.97, 1080PsF30
1080i50, 1080i59.94, 1080i60

2K Video Standards

2K DCI 23.98p, 2K DCI 24p, 2K DCI
25p, 2K DCI 23.98PsF, 2K DCI 24PsF,
2K DCI 25PsF

Ultra HD Video Standards

None

4K Video Standards

None

SDI Compliance

SMPTE 259M, SMPTE 292M, SMPTE
296M, SMPTE 372M and SMPTE 425M
A/B.

SDI Metadata Support

RP 188/SMPTE 12M-2 and closed
captioning.

Audio Sampling

Television rate of 48kHz and 24 bit.

SDI Video Sampling

4:2:2/4:4:4

Color Space

REC 601, REC 709.

HDMI Resolution

Pixel for pixel HD resolution input
from connected device.

Multiple Rate support

SDI and HDMI video connections are
switchable between standard
definition and high definition. SDI
switches between 270 Mb/s, 1.5 Gb/s
and 3 Gb/s.

Hardware Frame Buffer

v210 (10 bit YUV), 2vuy (8 bit YUV), ARGB, BGRA (8 bit RGB), r210 (10 bit RGB), R12B,R12L (12 bit RGB).

BLACK MAGIC RECORDER

Color Precision

HDMI

8-bit RGB 4:4:4 up to 1080p30, and 8, 10-bit YUV 4:2:2 in all standards.

SDI

8, 10, 12-bit RGB 4:4:4 up to 1080p30, and 8, 10-bit YUV 4:2:2 in all standards.

Computer Capture

1 x Thunderbolt™ 3 for Mac and Windows. Powers from Thunderbolt host computer, includes Blackmagic Desktop Video SDK.

Control

Built in Control Panel

None. Supports Teranex Mini Smart Panel with 2.2 inch color display for video preview, audio meters and status.

Device Control

1 x RS-422 deck control.

Software Applications



DaVinci Resolve



Fusion



Final Cut Pro X



Adobe Premiere Pro CC



Avid Media Composer



Adobe After Effects CC



Avid Pro Tools



Steinberg Cubase



Steinberg Nuendo



Adobe Photoshop CC

Other supported applications include:

The Foundry Nuke, Grass Valley Edius, Sony Catalyst Production Suite, Tools On Air Just: Play & Live & In, Softron MovieRecorder & MReplay, Adobe Flash Media Live Encoder, Telestream Wirecast, Livestream Producer, Resolume Arena, Magix Vegas Pro & Movie Edit Pro Premium, Corel VideoStudio Pro, CyberLink PowerDirector, Vidblaster X & Studio & Broadcast, Uniplay One & CG, CasparCG Server, Magicsoft CG, Xsplit Broadcaster, Imagine Communications Velocity & InfoCaster, DevTek Easy Media Suite, Metus Ingest, Boinx Software MimoLive, Cinegy Capture Pro, vMix Live, Renewed Vision ProPresenter, Ventuz Director, Class X Liveboard & Coral CG, Glookast Capturer, Open Broadcaster Software Studio, Nautilus NEMO3D, Burst Video Webclip2Go & [REC]Marker, Autodesk Flame, Zoom.

BLACK MAGIC RECORDER

SDI Video Standards

SD Video Standards

525i59.94 NTSC, 625i50 PAL

HD Video Standards

720p50, 720p59.94, 720p60
1080p23.98, 1080p24, 1080p25,
1080p29.97, 1080p30, 1080p47.95,
1080p48, 1080p50, 1080p59.94,
1080p60
1080PsF23.98, 1080PsF24,
1080PsF25, 1080PsF29.97, 1080PsF30
1080i50, 1080i59.94, 1080i60

2K Video Standards

2Kp23.98 DCI, 2Kp24 DCI, 2Kp25 DCI,
2Kp29.97 DCI, 2Kp30 DCI,
2Kp47.95 DCI, 2Kp48 DCI, 2Kp50 DCI,
2Kp59.94 DCI, 2Kp60 DCI
2KPsF23.98 DCI, 2KPsF24 DCI,
2KPsF25 DCI, 2KPsF29.97 DCI,
2KPsF30 DCI

Ultra HD Video Standards

2160p23.98, 2160p24, 2160p25,
2160p29.97, 2160p30, 2160p47.95,
2160p48, 2160p50, 2160p59.94,
2160p60

4K Video Standards

4Kp23.98 DCI, 4Kp24 DCI, 4Kp25 DCI,
4Kp29.97 DCI, 4Kp30 DCI,
4Kp47.95 DCI, 4Kp48 DCI, 4Kp50 DCI,
4Kp59.94 DCI, 4Kp60 DCI

3D Video Standards

720p50, 720p59.94, 720p60
1080p23.98, 1080p24, 1080p25,
1080p29.97, 1080p30, 1080p47.95,
1080p48
1080PsF23.98, 1080PsF24,
1080PsF25, 1080PsF29.97, 1080PsF30
1080i50, 1080i59.94, 1080i60
2Kp23.98 DCI, 2Kp24 DCI, 2Kp25 DCI,
2Kp29.97 DCI, 2Kp30 DCI,
2Kp47.95 DCI, 2Kp48,
2KPsF23.98 DCI, 2KPsF24 DCI,
2KPsF25 DCI
2160p23.98, 2160p24, 2160p25,
2160p29.97, 2160p30, 2160p47.95,
2160p48
4Kp23.98 DCI, 4Kp24 DCI, 4Kp25 DCI,
4Kp29.97 DCI, 4Kp30 DCI,
4Kp47.95 DCI, 4Kp48 DCI

SDI Compliance

SMPTE 259M, SMPTE 274M,
SMPTE 292M, SMPTE 296M,
SMPTE 372M, SMPTE 424M,
SMPTE 425M, SMPTE 435, SMPTE
2048-1, SMPTE 2081-10, SMPTE
2081-11, SMPTE 2082-10, SMPTE
ST2108-1, ITU-R BT.656 and ITU-R
BT.601.

SDI Metadata Support

RP 188/SMPTE 12M-2 and
closed captioning.

SDI Audio Sampling

Television standard sample rate of
48 kHz and 24-bit.

SDI Video Sampling

4:4:4, 4:2:2

SDI Color Space

REC 601, REC 709, REC 2020.

HDR Support

HDR metadata packing, HLG and PQ
transfer characteristics.

SDI Configuration

SDI output is configurable for Quad
Link 3Gb/s via Blackmagic Desktop
Video Utility. When using single link
12Gb/s on SDI A or dual link 6Gb/s on
SDI A and B, SDI C and D will output
downconverted HD.

HDMI Video Standards

SD Video Standards

525i59.94 NTSC, 625i50 PAL

HD Video Standards

720p50, 720p59.94, 720p60
1080p23.98, 1080p24, 1080p25,
1080p29.97, 1080p30, 1080p50,
1080p59.94, 1080p60
1080i50, 1080i59.94, 1080i60

Ultra HD Video Standards

2160p23.98, 2160p24, 2160p25,
2160p29.97, 2160p30, 2160p50,
2160p59.94, 2160p60

4K Video Standards

4Kp23.98 DCI, 4Kp24 DCI, 4Kp25 DCI,
4Kp29.97 DCI, 4Kp30 DCI, 4Kp50 DCI,
4Kp59.94 DCI, 4Kp60 DCI

3D Video Standards

720p50, 720p59.94, 720p60
1080p23.98, 1080p24, 1080p25,
1080p29.97, 1080p30,
1080i50, 1080i59.94, 1080i60

HDMI Audio Sampling

Television standard sample rate of
48 kHz and 24-bit.

HDMI Video Sampling

4:4:4, 4:2:2, 4:2:0

HDMI Color Space

REC 601, REC 709, REC 2020.

HDR Support

HDR static metadata packing, HLG
and PQ transfer characteristics.

HDMI Configuration

HDMI 2.0b supports Deep Color and
HDR. Automatically configures to
connected display.

Multiple Rate Support

HDMI and SDI video connections are
switchable between SD/HD/UHD and
4K. Component analog video
connections are switchable between
SD and HD.

Copy Protection

HDMI input is unable to capture from
copy protected HDMI sources. Always
confirm copyright ownership before
capture or distribution of content.

BLACK MAGIC RECORDER

Hardware Frame Buffer

ARGB, BGRA (8-bit RGB 4:4:4:4), r210 (10-bit RGB 4:4:4), R12B and R12L (12-bit RGB 4:4:4) up to 2160p30.
2vuy (8-bit YUV 4:2:2) and v210 (10-bit YUV 4:2:2) in all modes.

Color Precision

8, 10, 12-bit RGB 4:4:4 up to 2160p30 and 8, 10-bit YUV 4:2:2 in all standards.

Computer Capture

2 x Thunderbolt 3 for Mac and Windows plus PCI Express Gen 2 for Mac, Windows and Linux. Includes Blackmagic Desktop Video SDK.

Control

Built in Control Panel

14 buttons for input selection. 5 inch color display.

Device Control

2 x RS-422 deck control.

Processing

Encoding

Hardware based real time H.265 encoder.

Ultra HD Down Conversion

Built in, high quality hardware down converter outputs Ultra HD to HD with down-converted signal on SDI outputs C & D and HDMI output when connected to an HD-only TV.

HD to SD Down Conversion

Built in, high quality hardware down converter outputs HD to SD with down-converted signal on SDI output B, Component and Composite NTSC/PAL. SD output selectable between letterbox, anamorphic 16:9 and center cut 4:3.

HD Up Conversion

Built in, high quality hardware up conversion from SD to 720HD or 1080HD on playback. Selectable between 4:3 pillarbox, 14:9 zoom and 16:9 zoom.

HD Cross Conversion

Built in, high quality hardware cross conversion from 720p to 1080HD and 1080HD to 720p on playback.

Real Time Effects

DaVinci Resolve, Final Cut Pro X internal effects. Adobe Premiere Pro CC Mercury Playback Engine effects. Avid Media Composer internal effects.

Colorspace Conversion

Hardware based real time.

3D Processing

Dual stream and frame packed capture & playback.

Physical Installation

Requires a computer with either a Thunderbolt port or available PCI Express slot. Blackmagic PCI Express Cable Kit available separately for high speed PCI Express Gen 3 connection. Please check support pages to see the full system requirement.