EQUIPMENT SPECIFICATIONS

Item 1: **2 RU openGear Rackmount Frame QTY 1**

Frame Controller and Fan	
Power	Total Power: 50 W Maximum
	Maximum Power: +12 V Rail 4 A, 48 W
	Maximum Power: -7.5 V Rail 0.2 A, 1.5 W
Number of Inputs	Two Looping
Level	1 V pp Nominal
Signal	Analog Video Sync (Blackburst or Tri-Level), or AES/EBU DARS
Impedance	75 Ohms Terminating
Return Loss	>30 dB to 30 MHz
Maximum DC on REF Input	±1 V
Card Slot Number of Slots	20
Total Power	500 W
Maximum Card Power	High-Density (Split) Rear Module: 15 W per Card, Accommodates Two opengear Cards and Requires Two Slots in the Frame Chassis
	Standard Rear Module Accommodates One openGear Card and Requires Two Slots in the Frame Chassis: 30 W per Card, or 45 W if the openGear Card Has Integrated Cooling.
	Double Wide Rear Module: 60 W per Card, or 75 W for a Single Card with Integrated Cooling, or 90 W for a Multi-Slot Assembly with Integrated Cooling and Receiving Power from Two or More Midplane Connectors.
Dimensions	2 RU: 19 x 16.82 x 3.5" / 48.3 x 42.7 x 9 cm
Power Input	6.3 A, 650 W
Outputs	Output 1: 12 V 41.6 A, 500 W Maximum
	Output 2: -7.5 V 5 A, 37.5 W Maximum
	Total Sum of Both Outputs not to Exceed 500 W

Reference: AJA openGear Rackmount Frame for 20 openGear Cards (2 RU) or Equivalent

Item 2: **Bi-Color LED Light 100W QTY 3**

Beam Angle	105°
Color Temperature	2700 to 6500K
Color Accuracy Standard	CRI 95
	TLCI 96
Cooling System	Fan
Dimming	Yes, 0 to 100%
Housing Material	Polycarbonate
Lens Reflector Mount	Bowens S-Type
Fixture Mount	5/8" Receiver
Remote Control Type	Bluetooth
AC Input Power	100 to 240 VAC, 50 / 60 Hz
DC Input Power	48 VDC
Power Source	AC Adapter, External Battery
Max Power Consumption	100 W

Reference: Amaran 100x Bi-Color LED Light or Equivalent

Item 3: **USB-C Male To USB-C Male 3.2 Gen 2 QTY 12**

Interface	USB 3.2 Gen 2x2 (20 Gb/s)
Connector 1	USB Type-C Male
Connector 2	USB Type-C Male
Cable Type	Cable
Cable Length	3.28' / 100 cm
Current Rating	5:00 AM
Maximum Supported Wattage	100 W

Reference: Angelbird USB-C Male To USB-C Male 3.2 Gen 2 or Equivalent

Item 4: **Collapsible Softbox for 8x8" LED Light Panels QTY 2**

Item Type	14.6 x 17.7" Softbox (Rectangular Shape)
Interior Color	Silver
Light Compatibility	Direct Attachment (Requires No Bracket/Speed Ring): For Universal 8x8" LED Panels
Quick Open Type	Collapsible
Accepts Grids	Yes (Not Included)
Maximum Wattage	250 W
Removable Front Face	No
Materials	Polyester
Dimensions	17.7 x 14.6 x 6.3" / 45 x 37 x 15.9 cm (Open)
Weight	12.8 oz / 363 g

Reference: Angler Collapsible Softbox for 8x8" LED Light Panels or Equivalent

Item 5: Lantern Softbox QTY 1

Item Type	26" Lantern Softbox (Rounded Shape)
Interior Color	White (Translucent)
Quick Open Type	Click/Locking Type
Accepts Grids	No
Removable Front Face	No
Removable Interior Baffle	No
Light Loss/Gain	1-Stop Loss
Materials	Fabric
Dimensions	ø: 25.6 x H: 22" / ø: 65 x H: 56 cm (Open)
Weight	2 lb / 0.9 kg

Reference: Aputure Lantern Softbox (2.2') or Equivalent

Item 6: **Light Dome QTY 2**

Item Type	33.5" Parabolic Softbox (16-Sided Hexadecagon Shape)
Interior Color	White (Translucent)
Light Compatibility	Includes Speed Ring with Bowens S Mount
Quick Open Type	No
Accepts Grids	Yes (Included)
Removable Front Face	Yes
Removable Interior Baffle	Yes
Light Loss/Gain	1.5-Stop Loss
Materials	Fabric
Dimensions	ø: 33.5 x H: 17.7" / ø: 85 x H: 45 cm (Open)
Weight	2.4 lb / 1.1 kg

Reference: Aputure Light Dome SE (35.5") or Equivalent

Item 7: **10GBase-T PCIe Network Adapter QTY 6**

Networking Ports	1 x 10Gb LC
Host Connection	PCIe x4
Supported IEEE Standards	802.1p, 802.3ab, 802.3an, 802.3az, 802.3u
Jumbo Frames Support	9000 Bytes

Reference: ASUS XG-C100C 10GBase-T PCIe Network Adapter or Equivalent

Item 8: **monitor headphones QTY 2**

Earpiece Design	Over-Ear (Circumaural), Closed-Back
Earpiece Swivel	Yes, 90°
Earpiece Connection / Wearing Style	Headband
Foldable	Yes
Driver Type	Dynamic
Driver Size	1.8" / 45 mm
Magnet Type	Neodymium
Voice Coil	Copper-Clad Aluminum Wire
Impedance	38 Ohms
Active Noise Cancellation	No
Frequency Response	15 Hz to 28 kHz
Sensitivity	99 dB
Maximum Power Handling	1600 mW
Audio Connector to Source	1 x 1/8" / 3.5 mm TRS Male Straight
Connector Plating	Gold
Adapter (Included)	1/4" TRS
Cable Design	Single-Sided, Detachable
Audio Connector to Earpiece	1 x 2.5 mm TRS Male
Cable Length	3.9 to 9.8' / 1.2 to 3 m

Reference: Audio-Technica ATH-M50x Closed-Back Monitor Headphones or Equivalent

Item 9: **16U Equipment Rack QTY 2**

Rack Form Factor	16 RU
Load Capacity	440 lb / 199.6 kg
Caster/Wheel	3" / 7.6 cm
Material of Construction	Steel
Exterior Dimensions (W x H x D)	19.7 x 34.4 x 18.1" / 50 x 87.5 x 46 cm

Reference: Auray ERS-16U Steel Equipment Rack with 3" Casters (16 RU) or Equivalent

Item 10: **2U Rack Shelf QTY 6**

Material of Construction	Steel
Load Capacity	40 lb (18.1 kg)
Dimensions	19 x 14.25" (48.5 x 36.2 cm)

Reference: Auray RS-2U Rack Shelf (2 RU) or Equivalent

Item 11: **Video Tripod Kit QTY 3**

Material of Construction	Aluminum
	Anodized aluminum twist locks
Payload	5.5 lb / 2.5 kg
Maximum Height	57" / 145 cm (with column extended)
	47.8" / 121.5 cm (with column retracted)
Minimum Height	16" / 40 cm
Folded Height	20.5" / 52 cm
Head Mount	Flat base with 3/8"-16 threaded mounting hole
Leg Sections	4
Bubble Level	Yes
Foot Type	Rubber
Leg Diameter	4 Leg Sections: 0.9, 0.7, 0.6, 0.5" / 2.2, 1.8, 1.5, 1.2 cm

Reference: Benro SLIM Video Tripod Kit (Aluminum) or Equivalent

Item 12: **6G SFP Optical Module QTY 5**

Form Factor	SFP cage
Fiber Connector	Duplex LC Connectors
	Compatible with Singlemode Fiber

Reference: Blackmagic Design 6G SFP Optical Module or Equivalent

Item 13: **full-featured hardware control panel for BMD ATEM switchers QTY 1**

Connections	Ethernet: 2 x RJ45, 10/100/1000BASE-T
	Firmware: 1 x USB Type-C
	AC Power: 1 x IEC
	DC Power: 1 x 4-pin XLR, 12 VDC
Power Consumption	45 W
Power Supply	Input: 110-240 VAC
Environmental	Operating Temperature: 32 to 104°F / 0 to 40°C
	Storage Temperature: -4 to 140°F / -20 to 60°C
	Relative Humidity: Up to 95%
Dimensions	15.3 x 16.9" / 38.9 x 43 cm

Reference: Blackmagic Design ATEM 1 M/E Advanced Panel or Equivalent

Item 14: **live event multicamera production switcher QTY 1**

Effect Types	1 x DVE and Stinger
	4 x Chroma Key
	7 x Luma Key
Downstream Keys	2 x Alpha
Generators	7 x Pattern
	2 x Color
Switching Type	Pushbutton, Software
Latency	2 Lines
Color Processing	10-Bit
Number of Video Input Sources	10
Video Input Connectors	10 x BNC (3G-SDI / 6G-SDI / HD-SDI / SD-SDI)
	1 x HDMI
Input Video Format	SDI (10-Bit)
	UHD 4K: 23.98/24/25/29.97/30 fps
	1080p: 23.98/24/25/29.97/50/59.94 fps
	1080i: 50/59.94 fps
	720p: 50/59.94 fps
	PAL: 25 fps
	NTSC: 29.97 fps
	HDMI
	UHD 4K: 23.98/24/25/29.97 fps
	1080p: 50/59.94 fps
	1080i: 50/59.94 fps
	720p: 50/59.94 fps
	PAL
	NTSC
Audio Input Connectors	2 x 3-Pin XLR
	1 x 2RCA
Embedded Audio Input	SDI: 2-Channel (per Input)
Video Output Channels	1
Video Output Connectors	2 x BNC (3G-SDI / 6G-SDI / HD-SDI / SD-SDI) (Program)
	1 x BNC (HD-SDI) (Program)
	1 x HDMI (Program)
	1 x BNC (3G-SDI / 6G-SDI / HD-SDI / SD-SDI) (Preview)
	3 x BNC (3G-SDI / 6G-SDI / HD-SDI / SD-SDI) (Pass-Through)
Output Video Format	SDI (10-Bit)
	UHD 4K: 23.98/24/25/29.97/30 fps
	1080p: 29.97/50/59.94 fps

	1080i: 50/59.94 fps
	720p: 50/59.94 fps
	PAL (768 x 576)
	NTSC
	HDMI (10-Bit)
	UHD 4K: 23.98/24/25/29.97 fps
	1080p: 50/59.94 fps
	1080i: 50/59.94 fps
	720p: 50/59.94 fps
	PAL (768 x 576)
	NTSC
Audio Output Connectors	2 x 3-Pin XLR
Multiview Output	10-Way Multiview viaSDI
	10-Way Multiview viaHDMI
Other I/O	1 x BNC Blackburst, Tri-Level Sync
	1 x RJ45 LAN
	1 x USB Type-B
	1 x DE-9/DB-9 RS-422
Video Standard Compliance	SMPTE 259M/292M
HDCP Support	None
Display Size	2"
Hardware	
OS Compatibility	macOS 10.7 or Later
	macOS 10.8 or Later
	Windows 7
	Windows 8
Power Connector	2 x IEC C14 Input
Power Consumption	Device: 100 to 240 VAC (300 W)
Rack Form Factor	1 RU
Dimensions	19 x 9.25 x 1.7" / 48.26 x 23.5 x 4.32 cm

Reference: Blackmagic Design ATEM 1 M/E Production Studio 4K or Equivalent

Item 15: **live event multi camera production switcher with 20 video inputs built in QTY 1**

Ultra HD Support	3840 x 2160p 23.98/24/25/29.97
HD Format Support	720p 50/59.94
	1080i 50/59.94
	1080p 23.98/24/25/29.97/50/59.94
SD Format Support	NTSC: 525/29.97 - 4:3/16:9
	PAL: 625/25 - 4:3/16:9
HDMI Input Resolution Supported	Input resolutions for computer:
	720 x 480i 59.94 Hz
	720 x 576i 50 Hz
	1280 x 720 50/59.94 Hz
	1920 x 1080 50/59.94 Hz
	3840 x 2160 23.98/24/25/29.97 Hz
	Note: Also supported are: 24, 30, and 60 Hz inputs when switcher is in 23.98, 29.97, and 59.94 Hz formats respectively.
SDI Compliance	SMPTE 259M, 292M
Connectivity	
Video Inputs	20 x SDI (10-bit SD/HD/Ultra HD switchable)
	1 x HDMI Type A (10-bit SD/HD/Ultra HD switchable)
	2 Channel embedded audio for SDI and HDMI inputs
Audio Input	Digital
	20 x Embedded audio via SDI or HDMI
	Analog
	2 x XLR
	2 x RCA
	Extra Audio Inputs
	1 x XLR Timecode
	1 x XLR Talkback
Audio Output	SDI Audio Output
	2 Channels embedded into SDI outputs
	Analog
	2 x XLR Program
	2 x XLR Montior
	Extra Audio Outputs
	1 x XLR Timecode
	1 x XLR Talkback
Sync Input	1 x SDI, Tri-Sync or Blackburst
Frame Synchronizer	20 x Internal frame synchronizers (all inputs)
Program Output	3 x SDI (10-bit SD/HD/Ultra HD switchable)

	1 x HDMI Type A (10-bit SD/HD/Ultra HD switchable)
	1 x SDI (Ultra HD to HD downcoverted output)
Preview Output	1 x SDI (10-bit SD/HD/Ultra HD switchable)
Auxiliary Output	6 x SDI (10-bit SD/HD/Ultra HD switchable)
Multi View Output	2 x SDI
	2 x HDMI
Multi View Output	1 x SDI
	1 x HDMI
Ethernet	1 x 10/100/1000 BaseT input. Allows direct connection between control panel and chassis, or via network
Tally Output	Added via Ethernet connection to Blackmagic Designed GPI and Tally Interface product (sold separately)
GPI	Added via Ethernet connection
	Note: GPI and Tally Interface product are optional and are not included
USB Interface	1x USB 2.0 port
Processing	
Color Space Conversion	Hardware based, real time
Processing Delay	<2 lines
Video Sampling	4:02:02
Color Space	REC 601
	REC 709
	REC 2020
Color Precision	10-bit
Audio Mixer	22 input mixer (2 channels per input)
	Selectable On/Off/Audio-Follow-Video
	Level and Peak metering
	Master gain control
	Dedicated analog outputs for monitoring
Built-in Media Players	
Quantity	2
Channels	2 x per Media Player (fill and key)
Still Image Capacity	32 with fill and key
Clip Capacity	Quantity
	2 with fill and key
	Maximum Clip Length
	Ultra HD: 180 frames
	1080p/i: 720 frames
	720p: 1600 frames
	NTSC/PAL: 3600 frames

Image File Formats	Still
	PNG, TGA, BMP, GIF, JPEG, and TIFF
	Video
	TGA sequence
	Audio
	WAV, MP3, AIFF
Multi-View Monitoring	
Display	Minimum monitor resolution: 1366 x 768
Number of Windows	2 Multi-view display with 10 x windows for:
	Preview
	Program
	16 x assignable displays
Tally	Red for program and green for preview indication
	Note: Requires optional Blackmagic Design GPI and Tally interface product
Window Source Labels	Yes
Front Panel Controls	
Buttons	42 LED buttons for Aux switching
LCD Display	LCD display of Aux output
Control Panel	
Compatibility	ATEM 2 M/E Broadcast Panel (preferred)
	ATEM 1 M/E Broadcast Panel
Software Compatibility	ATEM Software Control Panel
	Mac
	OS X 10.8 Mountain Lion
	OS X 10.9 Mavericks or later
	Windows
	Windows 7 64-bit
	Windows 8 32/64-bit
	Configuration
	Set via ATEM Software Control Panel, excluding ATEM chassis IP address which is set via the ATEM Switcher Utility connected via USB to chassis
Layers	13 total
Keyers	4 x Upstream
	2 x Downstream
	7 x Linear/Luma
	1 x Stinger
	4 x Chroma

	1 x DVE, with 3D borders and drop shadows
Generators	7 x Pattern
	2 x Color
Power	
Power Supply	2 x built-in power supply
	110/240 VAC, 50/60 Hz
	Note: IEC power cord required, not included
Power Consumption	150 W

Reference: Blackmagic Design ATEM 2 M/E Production Studio 4K or Equivalent

Item 16: **HD 4K-compatible, 8-input live production switcher QTY 1**

Inputs	12G/HD/SD-SDI: 8 x BNC
	Audio: 2 x 3-Pin XLR
	Reference: 1 x BNC
Outputs	12G/HD/SD-SDI: 8 x BNC
	Auxiliary: 1 x BNC
	Program: 1 x BNC
	Multiview: 1 x BNC
	Multiview: 1 x HDMI
	Headphone: 1
Other	1 x RS-422
	1 x Ethernet
	1 x USB 2.0
	1 x AC Power In
	1 x 4-pin XLR Power In
Standards	
Format Support	UHD Video:
	2160p: 59.94/50/29.97/25/24/23.98
	HD Video:
	1080p: 59.94/50/29.97/25/24/23.98
	1080i: 59.94/50
	720p: 59.94/50
	Input Resolutions for Computers
	2160p: 59.94/50/30/29.97/25/24/23.98
	1080p: 59.94/50/30/29.97/25/24/23.98
	1080i: 60/59.94/50
	720p: 59.94/50
SDI Compliance	292M, 424M
	2081, 2082
Video Sampling	4:2:2, 10-Bit
Color Precision	4:2:2, 10-Bit
Color Space	4:2:2 YUV
Color Space Conversion	None
Processing Delay	6 Lines
General	
Audio Mixer	12-Input x 2-Channel Mixer
Keyers	Upstream: 1 with Chroma/Linear/Luma Key
	Downstream: 2
	Chroma: 1
	Linear/Luma: 3
	Transition (Stinger/DVE): 1

Layers	Up to 5
Generators	Pattern: 2
	Color: 2
DVE	Border and Drop Shadow: 1
Number of Windows	Multiview: 1 x 10
	Routable: 8
	Fixed, Program, and Preview: 2
Media Player	Players: 2 (Non-Volatile Flash Memory)
	Media Pool Still Image Capacity: 20 (with Fill and Key)
	Media Pool Still Image Format: PNG, TGA, BMP, GIF, JPEG, TIFF
	Channels: Fill and Key for Each Media Player
	Media Pool Clip Capacity: 2 (with Fill and Key / Shared Pool)
	Media Pool Clip File Format: TGA Sequence
	Media Player Clip Length:
	UHD 4K: 90 Frames
	1080 HD: 360 Frames
	720 HD: 1440 Frames
	Media Pool Audio File Format: WAV, MPE, AIFF
Compatible Operating Systems	MacOS 10.12 Sierra
	MacOS High Sierra 10.13 or Higher
	Windows 8.1 or 10
Power Supply	AC: 110-240 VAC Internal
	DC: 1 x 4-Pin XLR
Power Draw	70 W
Environmental	Operating: 41 to 104°F / 5 to 40°C
	Storage: -4 to 140°F / -20 to 60°C
	Relative Humidity: 0 to 90% Non-Condensing
Dimensions	16.65 x 11.89" / 42.29 x 30.2 cm

Reference: Blackmagic Design ATEM Television Studio Pro 4K Live Production Switcher or Equivalent

Item 17: **8-input live production switcher with integrated control panel QTY 1**

Inputs	4 x 3G/HD/SD-SDI, BNC
	4 x HDMI Type A
	2 x 3-pin XLR, analog audio
	1 x BNC, reference
	1 x 1/4" (front panel), microphone
Outputs	4 x SDI BNC, talkback PGM
	1 x BNC, program out
	1 x BNC, AUX
	1 x HDMI Type A, multiview
Other	1 x D-Sub 9, RS-422
	1 x RJ45, Ethernet
	1 x USB 2.0 Type-B
	1 X IEC C13, power
	1 X 4-pin XLR, power
Standards	
Format Support	1080p: 59.94/50/29.97/25/24/23.98
	1080i: 59.94/50
	720p: 59.94/50
	NTSC/525i: 4:3/16:9
	PAL/625i: 4:3/16:9
	HDMI Resolutions for Computers
	1080p: 59.94/50/30/29.97/25/24/23.98
	1080i: 60/59.94/50
	720p: 59.94/50
	720 x 480i: 59.94 Hz
	720 x 576: 50 Hz
SDI Compliance	SMPTE 259M, 292M, 424M
Video Sampling	4:2:2, 10-bit
Color Precision	4:2:2, 10-bit
Color Space	4:2:2 YUV
Color Space Conversion	Hardware-based real time
Processing Delay	6 lines
Audio Mixer	10-input x 2-channel mixer
Keyers	Upstream: 1
	Downstream: 2
	Chroma: 1
	Linear/Luma: 3
	Transition (Stinger/DVE): 1
Layers	Up to 5
Generators	Pattern: 2

	Color: 2
DVE	Border and Drop Shadow: 1
Interface	Requires monitor resolution of 1366 x 768 or greater
Number of Windows	10
Routable Windows	8 x Routable
	2 x Fixed, for program and preview
Tally	Red for program, green for preview
	Tally output supported via Ethernet connection to separately available GPI and Tally Interface products
Compatible Operating Systems	Apple macOS 10.10, 10.11, or newer
	Windows 8.1 or 10
Power Supply	110-240 VAC (internal)
Power Draw	40 W
Environmental	Operating: 41 to 104°F / 5 to 40°C
	Storage: -4 to 140°F / -20 to 60°C
	Relative Humidity: 0 to 90% non-condensing
Dimensions	16.65 x 11.89" / 42.29 x 30.20 cm

Reference: Blackmagic Design ATEM Television Studio Pro HD Live Production Switcher or Equivalent

Item 18: **Audio to SDI Mini Converter QTY 2**

SDI Input	1 x SDI on BNC (switchable between 3G/HD/SD)
	1 x 3G/HD/SD-SDI redundant input (automatically switches over if main SDI input is lost)
Audio Input	4 x 1/4" jacks support 4 channels of balanced analog, or 8 channels of balanced AES/EBU digital audio
SDI Output	1 x SDI on BNC (switchable between 3G/HD/SD)
SDI Auto Switching	Auto-detection of 3G/2K/HD/SD-SDI
Updates and Configuration	Via USB 2.0 high-speed (480 Mb/s)
Reclocking	Yes
SDI Compliance	SMPTE 292M/259M/296M/372M/424M-B/425M
SDI Video Rates	ITU-R BT.656/BT.601
	SDI video connections are switchable between HD and SD
SDI Video Sampling	4:2:2, 4:4:4
SDI Audio Sampling	Television standard sample rate of 48 kHz and 24-bit
SDI Color Precision	4:2:2, 4:4:4
SDI Color Space	YUV, RGB
SDI Auto Switching	Automatically selects between 3G/HD/SD
SDI Format Support	1080p: 60/59.94/50/30/29.97/25/24/23.98
	1080PsF: 30/29.97/25/24/23.98
	1080i: 60/59.94/50
	720p: 60/59.94/50
	525i: 59.94 NTSC
	625i: 50 PAL
2K Format Support	2K DCI 25p/24p/23.98p
	2K DCI 25PsF/24PsF/23.98PsF
Software Control	Mac OS X and Windows software upgrade via USB
Internal Software Upgrade	Via included updater application
Operating System	Mac OS X 10.11 El Capitan, macOS Sierra or later
	Windows 8.1 or Windows 10
Settings Control	Mini switches or USB software
Power Supply	+12 V universal power supply included, with international socket adapters for all countries and cable tie point

Reference: Blackmagic Design Audio to SDI Mini Converter or Equivalent

Item 19: **video I/O card With four bi-directional SDI interfaces QTY 2**

Host Connection	PCIe x4 (PCIe 2.0)
Video Input Connectors	4 x BNC (12G-SDI) Female
Input Video Format	SDI (8/10/12-Bit 4:4:4/4:2:2 RGB, YUV)
	1080p: 23.98/24/25/29.97/30/50/59.94/60 fps
	1080PsF: 23.98/24/25/29.97/30 fps
	1080i: 50/59.94/60 fps
	720p: 50/59.94/60 fps
	PAL: 50 fps
	NTSC: 60 fps
Audio Input Connectors	None
Input Audio Format	Analog: 48 kHz / 24-Bit
Embedded Audio Input	SDI: 16-Channel
Video Standard Compliance	SMPTE 259M/292M/296M/372M/425M
	ITU -R BT.601/BT.656
Other I/O	1 x BNC Blackburst, Reference, Tri-Level Sync Input
Hardware	
OS Compatibility	Windows 8.1.10 or Later
	macOS 10.14.15 or Later
	Linux
Power Consumption	10 W

Reference: Blackmagic Design DeckLink Duo 2 or Equivalent

Item 20: **4K Capture & Playback Card QTY 2**

SDI Video Input	1 x 10-bit 6G-SDI via BNC Connector
	Supports 6 Gb/s 4:2:2 and 3 Gb/s 4:4:4
SDI Video Output	1 x 10-bit 6G-SDI via BNC Connector
	Supports 6 Gb/s 4:2:2 and 3 Gb/s 4:4:4
Analog Video Input	Via included breakout cable:
	1 x Component YUV on three BNC connectors (HD and SD)
	1 x Composite
	1 x S-Video
HDMI Video Input	1 x HDMI Type A
HDMI Video Output	1 x HDMI Type A
SDI Audio Input	16 Channels embedded in HD, 2K, and 4K; 8 Channels embedded in SD
SDI Audio Output	16 Channels embedded in HD, 2K, and 4K; 8 Channels embedded in SD
HDMI Audio Input	8 Channels embedded
HDMI Audio Output	8 Channels embedded
Analog Audio Input	4 Channels of professional balanced analog audio via 1/4" jack connectors (via included breakout cable)
Analog Audio Output	4 Channels of professional balanced analog audio via 1/4" jack connectors (via included breakout cable)
	Channels 3 & 4 can switch to AES/EBU outputs
AES/EBU Audio Input	2 Channels unbalanced with sample rate converter (via included breakout cable)
AES/EBU Audio Output	2 Channels unbalanced (via included breakout cable)
	Analog outputs 3 and 4 can switch to AES/EBU outputs for audio 3 & 4 and 5 & 6 output, for a total of 6 AES/EBU output audio channels
Sync Input	Blackburst in SD, 720p50, 720p59.94, 1080i50 and 1080i59.94 formats or Tri-Sync in any HD, 2K, or 4K format
Device Control	RS-422 deck control port (Sony-compatible)
	Serial ports TxRx direction reversible under software control
Computer Interface	PCI Express 4 lane generation 2, compatible with 4, 8, and 16 lane PCIe slots

Codecs Supported	AVC-Intra, AVCHD, Canon XF MPEG2, Digital SLR, DV-NTSC, DV-PAL, DVCPRO50, DVCPROHD, DPX, HDV, XDCAM EX, XDCAM HD, XDCAM HD422, 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
	625/25 PAL
	525/29.97 NTSC
	720p 50/59.94/60
	1080i 50/59.94/60
	1080PsF 23.98/24/25/29.97/30
	1080p 23.98/24/25/29.97/30/50/59.94/60
	2048x1080p 23.98/24/25
	3840x2160p 23.98/24/25/29.97/30
	4096x2160p 23.98/24/25
SDI Compliance	SMPTE 259M, SMPTE 292M, SMPTE 296M SMPTE 372M, SMPTE 425M, ITU-R BT.656, and ITU-R BT.601
SDI Metadata Support	VITC read for 3:2 pulldown removal
	VANC capture and playback using up to 3 lines of video in file
	HD RP188
	Closed captioning
Audio Sampling	24-bit, 48 kHz
Video Sampling	4:2:2 and 4:4:4 (4K is 4:2:2)
SDI Color Precision	10-bit
Color Space	REC 601, REC 709
HDMI Configuration	HDMI automatically configures to connected display
HDMI Resolution	Pixel-for-pixel up to 4K resolutions
HDMI Color Precision	8-bit RGB, 10-bit YUV
HDCP Compatible	No. HDMI input is unable to capture from copy protected HDMI sources. Always confirm copyright ownership before capture or distribution of content.
Multiple Rate Support	SDI video connections are switchable between SD, HD, 3G, and 6G formats
Colorspace Conversion	Hardware based, real-time
HD Down Conversion	Built in, high quality hardware down converter outputs HD-SDI on SDI output, SD on SD-SDI, Composite and S-Video outputs when working in HD video formats on playback. Switch analog video to Component and choose HD or SD output. Selectable between letterbox, anamorphic 16:9 and center cut 4:3 styles.

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 pillarbox and 16:9 zoom. HD outputs via HD-SDI, HDMI and component analog.
Cross Conversion	Built-in, high-quality hardware cross conversion from 1280x720 to 1920x1080 and 1920x1080 to 1280x720 on playback
Real-Time Effects	Apple Final Cut Pro internal effects
	Adobe Premiere Pro CC Mercury Playback Engine effects
	Avid Media Composer internal effects
	Blackmagic Design DaVinci Resolve
Supported Operating Systems	Mac OS X 10.8 Mountain Lion, Max OS X 10.9 Mavericks or later
	Windows 7 or Windows 8
	Linux
Supported Applications	Apple Final Cut Pro X, Adobe Premiere Pro CC, Avid Media Composer, Adobe After Effects, Nuke - The Foundry, DaVinci Resolve, Avid Pro Tools, Steinberg Cubase, Autodesk Smoke, Adobe Photoshop, Steinberg Nuendo, Avid Symphony, Avid News Cutter, Tools On Air just:in & live:cut & just:play & just:live, Softron OnTheAir, MovieRecorder and OnTheAir CG, Flash Media Encoder, Wirecast, Livestream Procaster, Resolume Avenue 4, Sony Vegas Pro, Corel VideoStudio Pro X4, CyberLink Power Director, MAGIX Video Pro X4, Vidcaster Pro & Studio & Broadcast, Uniplay, Playbox AirBox, CasparCG, Magicsoft CG, Xsplit Broadcaster, Imagine Communications Velocity & InfoCaster

Reference: Blackmagic Design DeckLink Studio 4K Capture & Playback Card or Equivalent

Item 21: **pan handle-mounted focus control QTY 6**

Control Features	Focus Control
Compatible Cameras	Blackmagic Design studio 4K Plus/Pro
Control Connector	2 x USB Type-C
Attachment Method	ARRI/Hirth Rosette

Reference: Blackmagic Design Focus Demand or Equivalent

Item 22: **GPI & Tally Interface QTY 1**

Connections	dd
Contact Closure	25 pin D-type connector providing 8 up to isolated inputs and 8 relay contact closure outputs
Inputs	Optical isolators triggered by connection to ground (maximum 5 V @ 14 mA)
Outputs	Mechanical relay contact closure to ground (maximum 30 V @ 1 A)
Ethernet	10 / 100 BaseT with loop through for connecting to other Ethernet enabled equipment
Computer Interface	1 x USB 2.0 high speed interface for configuration and firmware updates
Software Included	Configured via ATEM Switcher utility
Firmware Upgrade	Firmware built into software driver. Loaded at system startup or via updater software
Operating System	Microsoft Windows 7 and Apple Mac OS X
Power Supply	12 V power supply included with international socket adapters for all countries

Reference: Blackmagic Design GPI & Tally Interface for ATEM Production Switchers or Equivalent

Item 23: **broadcast-quality record/playback deck QTY 3**

Video Input	1 x BNC, 3G-SDI
Video Output	1 x BNC, 3G-SDI
	1 x HDMI Type A
	1 x USB Type-C (Webcam or External Recording of SD, HD, 2K)
Timecode	In: 1 x BNC
	out: 1 x BNC
Reference	Tri-Sync or Black Burst
	Input Connector: 1 x BNC
	Output Connector: 1 x BNC
Audio Input	None (Embedded Audio Only, 16 Channels)
Audio Output	None (Embedded Audio Only, 16 Channels SDI, 8 Channels HDMI)
Device Control	1 x RS-422 Deck Control Port on DB9 Female
Ethernet	1 x RJ45 for Remote Operation
Media Interface	2 x SD Slots
	Media Type: UHS I and UHS II
	Format: ExFAT or HFS+
	2048 x 1080p: 30/29.97/25/24/23.98
	1920 x 1080p: 60/59.94/50/30/29.97/25/24/23.98
	1920 x 1080i: 60/59.94/50
	1280 x 720p: 60/59.94/50
	SD
	NTSC
	PAL
SDI Compliance	SMPTE 259M//292M/296M/372M/424M/425M Level A and B
	SMPTE 2084
	SMPTE 2108-1
SDI Metadata Support	HD RP188 and Closed Captioning CEA-708
	HDR Metadata Supported on SDI
Video Sampling	4:2:2 YUV
Color Depth	10-Bit
Color Space	REC 601
	REC 709
	REC 2020
HDR Support	Hybrid Log-Gamma, ST2084 300, ST2084 500, ST2084 800, ST2084 1000, ST2084 2000, ST2084 4000, ST2084
Multi Rate Support	Autodetection of SD and HD
Audio Sampling	Television Standard 48 kHz, 24-Bit

Supported Codecs	ProRes
	HQ QuickTime
	422 QuickTime
	LT QuickTime
	Proxy QuickTime for Formats up to 1080p60
	DNxHD
	220x
	220x MXF
	145
	145 MXF
	45
	45 MXF for 720p and 1080p HD Formats up to 60 fps
	H.264
	SDI 4:2:2 10-Bit
	High 4:2:0 8-Bit
	Medium 4:2:0 8-Bit
	Low 4:2:0 8-Bit for Progressive Formats up to 1080p60
Operating System	macOS: 10.15(Catalina), 11.5 (Big Sur) or Later
	Windows: 10 64-Bit
Rack Height	1 RU
Power Supply	AC

Reference: Blackmagic Design HyperDeck Studio HD Mini or Equivalent

Item 24: **1U broadcast-quality record/playback deck QTY 1**

Video Input	1 x BNC 6G-SDI
	1 x HDMI 2.0
Video Output	1 x BNC SDI Loop-Through
	2 x BNC 6G-SDI
	1 x SDI Monitor Output
	1 x HDMI 2.0
Embedded Audio	Input:
	16 x Channels SDI
	16 x Channels HDMI
	Output:
	8 x Channels SDI
	8 x Channels HDMI
Audio Output Connector	1 x 1/4" Headphone Jack
Network	1 x RJ45 1 Gb/s
SSD Interface	2 x 2.5" SATA 3Gb/s
Reference Input	1 x BNC
Reference Output	1 x BNC
Timecode Input	1 x BNC
Timecode Output	1 x BNC
Device Control	1 x RS-422 Input
	1 x RS-422 Output
Display Size	2.2" LCD
Speaker	Mono
Format Support	DCI/UHD 4K 2160p: 30/29.97/25/24/23.98
	2K 1440p: 30/29.97/25/24/23.98
	1080p: 60/50/30/29.97/25/24/23.98
	1080PsF: 30/29.97/25/24/23.98
	1080i: 60/59.94/50
	720p: 60/59.94/50
	NTSC/PAL
	525i 59.94
	625i 50
	480p60 and 576p50 via HDMI only
Supported Operating Systems	macOS 10.15 Catalina
	macOS 11.1 Big Sur or Later
	Windows 10, 64-Bit
Other Outputs	1 x USB Type-C for External Recording or Webcam Use
SDI Compliance	SMPTE 259M, SMPTE 292M, SMPTE 296M, SMPTE 372M, SMPTE 424M, SMPTE 425M level A and B, SMPTE 2081-1, SMPTE 2081-10, SMPTE 2084, and SMPTE 2108-1

SDI Metadata Support	HD RP188 and closed captioning CEA-708
	HDR Metadata supported on SDI
Sampling	Video: 4:2:2 YUV
	Audio: 24-Bit, 48 kHz
Color Precision	10-Bit
Color Space	REC 601, REC 709, REC 2020
	3D LUTS can be Applied to SDI Monitor Out
Multiple Rate Support	Auto-Detection of SD, HD and 6G-SDI
HDR Support	Hybrid Log Gamma, ST2084 300, ST2084 500, ST2084 800, ST2084 1000, ST2084 2000, ST2084 4000, ST2084
Codecs Supported	ProRes HQ QuickTime
	ProRes 422 QuickTime
	ProRes LT QuickTime
	ProRes Proxy QuickTime for all Formats up to 2160p30
	Playback only of:
	ProRes 4444 QuickTime up to 1080p60 with Auto Routing of Fill and Key over SDI A and B Outputs
	DNxHD 220x, DNxHD 220x MXF, DNxHD 145, DNxHD 145 MXF, DNxHD 45, DNxHD 45 MXF for 720p and 1080p HD Formats up to 60 fps
	DNxHR HQX, DNxHR HQX MXF, DNxHR SQ, DNxHR SQ MXF, DNxHR LB, DNxHR LB MXF for 2K DCI and 2160p Formats up to 30 fps
	H.264 SDI 4:2:2 10-Bit, H.264 High 4:2:0 8-Bit, H.264 Medium 4:2:0 8-Bit, H.264 Low 4:2:0 8-Bit for all Progressive Formats up to 1080p60
Media Slots	2 x 2.5" SSD
	2 x SD Card
Rack Size	1 RU
Power Input	1 x 110 to 240 VAC, 50/60 Hz Power Input
	1 x 12 VDC, 4-Pin XLR Input
Power Consumption	100 W Maximum

Reference: Blackmagic Design HyperDeck Studio HD Pro or Equivalent

Item 25: **Micro Converter BiDirectional SDI/HDMI 3G QTY 7**

Video Input Connectors	1 x BNC (3G-SDI / HD-SDI / SD-SDI)
	1 x HDMI (HDMI 2.0)
Input Video Format	SDI (8/10-Bit 4:2:2 RGB, YUV)
	DCI 2K: 23.98/24/25/29.97/30/47.95/48/50/59.94/60 fps
	DCI 2KPsF: 25/29.97/30 fps
	1080p: 23.98/24/25/29.97/30/47.95/48/50/59.94/60 fps
	1080PsF: 25/29.97/30 fps
	1080i: 50/59.94/60 fps
	720p: 50/59.94/60 fps
	NTSC: 59.94 fps
	PAL: 50 fps
	HDMI (8/10-Bit 4:2:2 RGB, YUV)
	1080p: 23.98/24/25/29.97/30/47.95/48/50/59.94/60 fps
	1080i: 50/59.94/60 fps
	720p: 50/59.94/60 fps
	NTSC: 29.97 fps
	PAL: 25 fps
Audio Input Connectors	None
Embedded Audio Input	HDMI
	SDI
Video Output Connectors	1 x BNC (3G-SDI / HD-SDI / SD-SDI)
	1 x HDMI (HDMI 2.0)
Output Video Format	SDI (8/10-Bit 4:2:2 RGB, YUV)
	DCI 2K: 23.98/24/25/29.97/30/47.95/48/50/59.94/60 fps
	DCI 2KPsF: 25/29.97/30 fps
	1080p: 23.98/24/25/29.97/30/47.95/48/50/59.94/60 fps
	1080PsF: 25/29.97/30 fps
	1080i: 50/59.94/60 fps
	720p: 50/59.94/60 fps
	NTSC: 29.97 fps
	PAL (768 x 576): 25 fps
Audio Output Connectors	None
Embedded Audio Output	HDMI
	SDI
Video Standard Compliance	SMPTE 259M/292M/296M/424M/425M-A/425M-B
HDCP Support	Version 2.2
Other I/O	1 x USB Type-C Input
Expansion Slots	None
Tally Light	Yes
OS Compatibility	macOS 10.14.15 or Later

	Windows 10
Power Connector	1 x USB Type-C (4.4 to 5.2 VDC) Input
Power Consumption	2.5 W

Reference: Blackmagic Design Micro Converter BiDirectional SDI/HDMI 3G (with Power Supply) or Equivalent

Item 26: **bidirectional, multi-rate SDI to optical fiber Converter QTY 5**

Video Input Connectors	1 x BNC (12G-SDI)
Input Video Format	SDI (4:4:4/4:2:2 RGB, YUV)
	DCI 4K: 23.98/24/25 fps
	UHD 4K: 23.98/24/25/29.97/30/50/59.94/60 fps
	DCI 2K: 23.98/24/25 fps
	DCI 2KPsF: 23.98/24/25 fps
	1080p: 23.98/24/25/29.97/30/50/59.94/60 fps
	1080PsF: 23.98/24/25/29.97/30 fps
	1080i: 50/59.94/60 fps
Embedded Audio Input	SDI: 16-Channel
Video Output Connectors	1 x BNC (12G-SDI / 3G-SDI / 6G-SDI)
Output Video Format	SDI (10-Bit 4:4:4/4:2:2 RGB, YUV)
	DCI 4K: 23.98/24/25 fps
	UHD 4K: 23.98/24/25/29.97/30/50/59.94/60 fps
	DCI 2K: 23.98/24/25 fps
	DCI 2KPsF: 23.98/24/25 fps
	1080p: 23.98/24/25/29.97/30/50/59.94/60 fps
	1080PsF: 23.98/24/25/29.97/30 fps
	1080i: 50/59.94/60 fps
Embedded Audio Output	SDI: 16-Channel
Video Standard Compliance	SMPTE 259M/292M/296M/297M/424M-B/425M/ST-2081
	ITU -R BT.601
Expansion Slots	1 x SFP Slot
Power Connector	1 x Barrel (6 to 36 VDC) Input
Power Consumption	Power Supply: 2 W

Reference: Blackmagic Design Mini Converter Optical Fiber 12G-SDI or Equivalent

Item 27: **1x8 distribution amplifier for SD-SDI, HD-SDI, and 3G-SDI signals. QTY 4**

Inputs	1x SDI: Detects & auto-switches between SD-, HD-, and 3G-SDI
Outputs	8x SDI: Automatically match the SDI video input
Re-clocking	Yes
Supported Formats	NTSC, PAL, 720p, 1080i, 1080PsF, 1080p, 2K p, and 2K PsF
SDI Compliance	SMPTE 259M, SMPTE 292M, SMPTE 296M, SMPTE 372M, and SMPTE 425M
Video Sampling	4:2:2 and 4:4:4
Audio Sampling	Television standard sample rate of 48 kHz and 24-bit
Color Precision	4:2:2 and 4:4:4
Color Space	YUV and RGB
ASI Support	Yes
Power Supply	12V universal power supply included

Reference: Blackmagic Design Mini Converter SDI Distribution or Equivalent

Item 28: **Cross-converter for SD and HD QTY 1**

Video Input	3G/HD/SD-SDI: 1 x BNC
	HDMI: 1 x Type A
Video Output	3G/HD/SD-SDI: 2 x BNC
	Loop-Through Out: 1 x BNC
	HDMI: 1 x type A
Reference Input	Black Burst & Tri-Level Sync: 1 x BNC
Reclocking	Yes
SDI Compliance	SMPTE 424M-B/296M/292M/259M
	ITU-R BT.656/BT.601
SDI Video Sampling	4:02:02
SDI Color Space	YUV
SDI Audio Sampling	48 kHz, 24-bit
	1080p 60/59.94/50/30/29.97/25/24/23.98
	1080PsF 24/23.98
	1080i 60/59.94/50
	720p 60/59.94/50
	1080p 60/59.94/50/30/29.97/25/24/23.98
	1080i 60/59.94/50
	720p 60/59.94/50
	NTSC SD: 525i 59.94
	PAL SD: 625i 50
Scaling	DVI Resolutions:
	1080p 60/59.94/50/30/29.97/25/24/23.98
	1080i 60/59.94/50
	720p 60/59.94/50
	625i 50
	525i 59.94
	1024 x 768
	800 x 600
	640 x 480

Reference: Blackmagic Design Mini Converter UpDownCross HD or Equivalent

Item 29: **OpenGear Converter - Audio to SDI QTY 1**

SDI Input	SDI: Switchable between SD, HD and 3 Gb/s SDI
	SDI Redundant: Automatically switches over if main SDI input is lost
SDI Output	Switchable between SD, HD and 3 Gb/s SDI
Analog Audio	Analog Audio: 4 channels of professional balanced analog audio with standard 1/4 inch jack connections
AES/EBU	8 channels of professional balanced digital with standard 1/4 inch jack connections
Format	625/25 PAL, 525/29.97 NTSC, 1080PsF23.98, 1080PsF24, 1080PsF25, 1080i50, 1080i59.94, 1080i60, 720p50, 720p59.94 and 720p60
Sampling	4:02:02
Power Requirements	Powered by rack chassis

Reference: Blackmagic Design OpenGear Converter - Audio to SDI or Equivalent

Item 30: **OpenGear Converter - SDI to Audio QTY 1**

SDI Input	SDI: Switchable between SD, HD and 3 Gb/s SDI
	SDI Redundant: Automatically switches over if main SDI input is lost
SDI Output	Switchable between SD, HD and 3 Gb/s SDI
Analog Audio	4 channels of professional balanced analog audio with standard 1/4 inch jack connections
AES/EBU	8 channels of professional balanced digital with standard 1/4 inch jack connections
	625/25 PAL, 525/29.97 NTSC, 1080PsF23.98, 1080PsF24, 1080PsF25, 1080i50, 1080i59.94, 1080i60, 720p50, 720p59.94 and 720p60
	625/25 PAL, 525/29.97 NTSC, 1080PsF23.98, 1080PsF24, 1080i50, 1080i59.94, 1080i60, 720p50, 720p59.94 and 720p60
	625/25 PAL, 525/29.97 NTSC, 625/50p PAL, 525/59.94p NTSC, 1080p23.98/24, 1080i50, 1080i59.94/60, 720p50 and 720p59.94/60
Sampling	4:02:02
Power Requirements	Powered by rack chassis

Reference: Blackmagic Design OpenGear Converter - SDI to Audio or Equivalent

Item 31: **OpenGear Converter – UpDownCross QTY 1**

SDI Input	1x, switchable between SD-SDI, HD-SDI, and 3G-SDI
SDI Output	7x outputs automatically match the SD/HD/3G-SDI video input unless up, down, cross and/or standards conversion is enabled.
	1x SDI loop output
Reference Input	Blackburst and TriSync for SD & HD
Multi-Rate Support	Auto-detection of HD or SD SDI input; auto-switching automatically selects among SD-SDI, HD-SDI, and 3G-SDI
USB	Updates & configuration via 1x USB 2.0 high-speed (480 Mb/s)
Re-clocking	Yes
SDI Format Support	625i25 PAL, 525i29.97 NTSC, 720p50, 720p59.94, 720p60, 1080PsF/23.98, 1080PsF/24, 1080PsF/25, 1080i50, 1080i59.94, 1080i60, 1080p50, 1080p59.94, 1080p60, 2048 x 1080p23.98, 2048 x 1080p24, 2048 x 1080p25, 2048 x 1080PsF/23.98, 2048 x 1080PsF/24, 2048 x 1080PsF/25, 2048 x 1556PsF/23.98, 2048 x 1556PsF/24, 2048 x 1556PsF/25
Compliance	SMPTE 259M, SMPTE 292M, SMPTE 296M, ITU-R BT.656, ITU-R BT.601
Video Sampling	4:02:02
Audio Sampling	Television standard sample rate of 48 kHz and 24-bit
Color Precision	4:02:02
Color Space	YUV

Reference: Blackmagic Design OpenGear Converter – UpDownCross or Equivalent

Item 32: **OpenGear Converter Optical Fiber Module QTY 3**

Input	SDI Video Input: 1 x switchable between SD, HD and 3 Gbs SDI
	Optical Fiber Video Input: 1 x 10 bit SD/HD/3 Gbs SDI switchable
	Optical Fiber Audio Input: 8 channel embedded
Output	SDI Video Output: 1 x switchable between SD, HD and 3 Gbs SDI
	Optical Fiber Video Output: 1 x 10 bit SD/HD/3 Gbs SDI switchable
	Optical Fiber Audio Output: 8 channel embedded
Standards	SDI Format Support:
	625/25 PAL, 525/29.97 NTSC, 1080PsF23.98, 1080PsF24, 1080PsF25, 1080i50, 1080i59.94, 1080i60, 720p50, 720p59.94 and 720p60.
	SDI Compliance:
	SMPTE 292M, SMPTE 259M, SMPTE 296M, ITU-R BT.656, ITU-R BT.601 and SMPTE 297M for Optical Fiber SDI
	SDI Video Sampling:
	4:02:02
	SDI Video Rates:
	SDI video connections are switchable between standard definition and high definition.
	SDI Color Precision:
	4:02:02
	SDI Color Space:
	YUV
	SDI Audio Sampling:
	Television standard sample rate of 48 kHz and 24 bit
	SDI Auto Switching:
	Automatically selects between SD SDI, HD-SDI and 3 Gbs SDI
	Analog Format Support:
	625/25 PAL, 525/29.97 NTSC, 1080PsF23.98, 1080PsF24, 1080i50, 1080i59.94, 1080i60, 720p50, 720p59.94 and 720p60
	Analog Color Precision:
	4:02:02
	Analog Color Space:
	YUV
	HDMI Format Support:

625/25 PAL, 525/29.97 NTSC, 625/50p PAL, 525/59.94p NTSC, 1080p23.98/24, 1080i50, 1080i59.94/60, 720p50 and 720p59.94/60
HDMI Color Precision:
4:2:2 and 4:4:4
HDMI Color Space:
YUV and RGB
Copy Protection:
For legal reasons, capture devices from Blackmagic Design are designed not to capture, convert or transmit video or audio from copy-protected sources, e.g. video devices using HDCP

Reference: Blackmagic Design OpenGear Converter Optical Fiber Module or Equivalent

Item 33: **OpenGear SDI Distribution Converter QTY 2**

Standards	
Video Standard Compliance	SMPTE 259M/292M/296M/372M/425M
Reclocking	Yes
Transmission	
Video Format	SDI (4:4:4/4:2:2 RGB, YUV)
	NTSC
	PAL
	720p
	1080i
	1080PsF
	1080p
	DCI 2K
	DCI 2KPsF

Reference: Blackmagic Design OpenGear SDI Distribution Converter or Equivalent

Item 34: **SDI to Audio Mini Converter QTY 2**

SDI Input	SDI: Switchable between SD, HD and 3 Gb/s SDI
	SDI Redundant: Automatically switches over if main SDI input is lost
Analog Audio	4 channels of professional balanced analog audio with standard 1/4 inch jack connections
AES/EBU	8 channels of professional balanced digital with standard 1/4 inch jack connections
Format	625/25 PAL, 525/29.97 NTSC, 1080PsF23.98, 1080PsF24, 1080PsF25, 1080i50, 1080i59.94, 1080i60, 720p50, 720p59.94 and 720p60
Sampling	4:02:02
Power Requirements	12VDC (includes power supply)

Reference: Blackmagic Design SDI to Audio Mini Converter or Equivalent

Item 35: **Smart Videohub 20 x 20 6G-SDI QTY 1**

SDI Video Input	20 x 10-bit SD/HD/6G-SDI
SDI Video Output	20 x 10-bit SD/HD/6G-SDI
Reference Input	Blackburst and TriSync for SD, HD and UHD 4K
Multi-Rate Support	Auto detection of SD, HD, or 6G-SDI. Simultaneous routing of 4K, HD, SD video and DVB-ASI
Updates	USB 2.0 high speed (480 Mb/s) interface or via Ethernet
Control	21 buttons for local control of Videohub
	6 buttons and scroll wheel for control of LCD display
	1 x RJ45 Ethernet
	1 x RS-422 input for controlling router crosspoint switching
Configuration	Via front panel LCD or use either RJ45 Ethernet
	USB 2.0 for setting IP address only
Reclocking	On all SDI outputs, auto switching between SD, HD, or 6G-SDI video
Standards	
Format Support	SD Format Support
	625/25 PAL
	525/29.97 NTSC
	525/29.98 NTSC
	HD Format Support
	720p 50/59.94/60
	1080i 50/59.94/60
	1080PsF 23.98/24/25/29.97/30
	1080p 23.98/24/25/29.97/30/50/59.94/60
	2K Format Support
	2048x1080p 23.98/24/25
	2048x1080PsF 23.98/24/25
	4K Format Support
	3840x2160p 23.98/24/25/29.97/30
	4096x2160p 24
SDI Compliance	SMPTE 259M, SMPTE 292M, SMPTE 296M, SMPTE 310M, SMPTE 425M Level B, ITU-R BT.656, and ITU-R BT.601
SDI Video Rates	SD-SDI: 270 Mb/s
	HD-SDI: 1.5 Gb/s
	3G-SDI: 3 Gb/s
	6G-SDI: 6 Gb/s
SDI Video Sampling	4:2:2 and 4:4:4
SDI Color Precision	4:2:2 and 4:4:4 10-bit
SDI Audio Sampling	48 kHz and 24-bit

SDI Color Space	YUV or RGB
SDI Metadata Support	Video payload identification ancillary data as per SMPTE 352M
Software	
Software Control	Router control included free for Windows and Mac OS X
Internal Software Upgrade	Via included updater application
General	
Display	LCD for video and menu settings
Power Supply	IEC power cable required
	90 to 240 VAC input
Power Fail Protection	Router connections preserved and restored instantly at power on
Operating Temperature	32 to 104°F (0 to 40°C)
Storage Temperature	-4 to 113°F (-20 to 45°C)
Relative Humidity	0 to 90% non-condensing
Rack Space	1 RU

Reference: Blackmagic Design Smart Videohub 20 x 20 6G-SDI or Equivalent

Item 36: **Rackmountable Dual 8" LCD Monitors QTY 1**

Panel Type	TFT LCD
Display Size	8.0" / 20.3 cm
Screen Resolution	800 x 480
Contrast Ratio	500:01:00
Bit Depth / Color Support	8-Bit (16.7 Million Colors)
Response Time	15 ms
I/O	
Video	2 x BNC (3G-SDI) Output
	2 x BNC (3G-SDI) Input
Audio	None
Built-In Speaker	None
Other I/O	1 x USB 2.0 (USB Type-B)
	1 x Tally (DE-9/DB-9)
	2 x LAN (RJ45)
Card Slot	None
Format Support	
Video Format	SDI (4:4:4)
	576i
	480i
	720p: 50/59.94/60
	1080i: 50/59.94/60
	1080PsF: 23.98/24/25/29.97/30
	1080p: 23.98/24/25/29.97/30/50/59.94/60
	DCI 2K: 23.98/24/25
Power	
DC Input Power	12 to 15 VDC
Battery Type	None
Power Consumption	20 W (Maximum)
Mounting	
Rack Form Factor	3 RU
General	
Dimensions	19 x 5.24 x 1.38" / 48.3 x 13.3 x 2.5 cm

Reference: Blackmagic Design SmartView Duo Rackmountable Dual 8" LCD Monitors or Equivalent

Item 37: **Studio Camera 4K QTY 6**

ISO Sensitivity	100 to 25,600
Gain	0 to 18 dB
Signal-to-Noise Ratio	63 dB
Lens Mount	Micro Four Thirds
Built-In ND Filter	None
Built-In Microphone Type	Stereo
Broadcast System Compatibility	NTSC, PAL
CCU Interface	None
Video I/O	1 x BNC (12G-SDI) Input
	1 x BNC (12G-SDI) Output
	1 x HDMI Output
Audio I/O	2 x 3-Pin XLR Input on Camera Body
	1 x 1/8" / 3.5 mm Stereo Mic Level Input
	1 x 1/8" / 3.5 mm TRRS Headphone/Microphone Input/Output
	1 x 5-Pin XLR Input/Output
Other I/O	2 x USB Type-C (USB 3.2 / 3.1 Gen 1) Data/Video Input/Output
	1 x RJ45 (Ethernet) Data/Control/Monitor/Video Input/Output
Recording	
Raw Recording	Blackmagic RAW 10-Bit
	3840 x 2160 at 23.98/24.00/25/29.97/50/59.94/60 fps [26 to 190 Mb/s]
Audio Recording	ProRes: 2-Channel 24-Bit 48 kHz LPCM Audio
Display Type	Fixed Touchscreen LCD
Size	7"
Resolution	1920 x 1200
Power I/O	1 x 4-Pin XLR (12 VDC) Input
	1 x Barrel (12 VDC) Input
Accessory Mount	2 x 1/4"-20 Female
Tripod Mount	3/8"-16 Female

Reference: Blackmagic Design Studio Camera 4K Pro or Equivalent

Item 38: **Studio Converter QTY 6**

Connections	SDI Video Inputs: 2
	SDI Video Outputs: 2
	SDI Monitor Outputs: 1
	SDI Rates: 1.5G, 3G, 6G, 12G
	Built in Speaker: mono
	Analog Audio Inputs: 2 channel analog program audio in supported via 9-pin connector
	Analog Audio Outputs: 1 x 6.35mm headphone jack
	SDI Audio Input:
	Return 1 with 2 channels of program audio embedded in 1.5G/3G/6G/12G-SDI
	4 talkback channels on 13, 14, 15, and 16
	Return 2 with 2 channels of audio embedded in 1.5G/3G/6G/12G-SDI
	SDI Audio Output:
	2 channels of program audio embedded in 1.5G/3G/6G/12G-SDI
	4 talkback channels on 13, 14, 15, and 16
	Timecode Connections: 1x BNC in, 1x BNC out
	Reference Connections: 1x BNC in, 1x BNC Out,; Tri-Sync or Black Burst
	Talkback Audio
	SDI channels 13 and 14 for Engineering talkback
	SDI channels 15 and 16 for Production talkback
	RJ-45 Talkback connector for analog external talkback systems
	Screen: 2.2" LCD
	Ethernet: 1 x 10Gb/s PoE RJ-45 Camera connector for SMPTE Fibre style workflow over Cat 6A network cable. 1 x 1Gb/s for external control and software updates.
	Computer Interface: 1x USB-C
Standards	HD Video Standards
	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
	SDI Compliance
	SMPTE 292M, SMPTE 424M, SMPTE 425M level A and B,

	SMPTE 2081-1, SMPTE 2081-10, SMPTE 2082-1 and SMPTE 2082-10
	Audio Sampling: television standard sample rate of 48kHz and 24-bit
	Video Sampling: 4:2:2
	Color Precision: 10-bit
	Color Space: REC 709, REC 2020
	Multiple Rate Support: SDI switches between HD, 3G-SDI, 6G-SDI and 12G-SDI
Control	Built-in Control Panel: 7 buttons with spin knob control and 2.2" color display for device control and menu settings
	External Control: RJ-45 1Gb/s Ethernet
Operating Systems	Mac 10.15 Catalina, Mac 11.1 Big Sur or later
	Windows 10, 64-bit

Reference: Blackmagic Design Studio Converter or Equivalent

Item 39: **Zoom Demand QTY 6**

Control Features	Zoom Control
Compatible Cameras	Blackmagic Design studio 4K Plus/Pro
Connectivity	
Control Connector	2 x USB Type-C
Mounting	
Attachment Method	ARRI/Hirth Rosette

Reference: Blackmagic Design Zoom Demand or Equivalent

Item 40: **Pocket LED RGB Video Light QTY 2**

Color Temperature	2500 to 8500K
Color Accuracy Standard	CRI 96
	TLCI 97
Dimming	Yes, 0 to 100%
Cooling System	Passive
Display	LCD
Expected Lamp Life	50000 Hours
Number of LEDs	290
Integrated Battery	
Capacity (mAh)	2930 mAh
Battery Chemistry	Lithium-Ion
Power	
Max Power Consumption	12 W
Power Source	Integrated Battery
Mount Type	1/4"-20 Female

Reference: BOLING Pocket LED RGB Video Light or Equivalent

Item 41: **Camera Sensor Cleaning Kit QTY 2**

	Rocket Air Blower
	Tin-Oxide Camera Sensor Cleaner Liquid
	APS-C Sensor Cleaning Swab (x10)
Included in the Kit	Lens Pen
	Plush Cleaning Brush
	9 x 9" Microfiber Cleaning Cloth (x2)
	6 x 6" Microfiber Cleaning Cloth (x2)

Reference: Movo Photo Deluxe Essentials Camera Sensor Cleaning Kit or Equivalent

Item 42: **BNC Plug for L-2.5CHD Cable QTY 150**

Compatibility	L-2.5CHD
Return Loss	(0 to 3 GHz) - 26 dB or Greater
Boot	CB02
Coupling Sleeve	Zinc Alloy Die Casting
Center Pin	Gold Plating

Reference: Canare 3.0 GHz 75-Ohm BNC Plug for L-2.5CHD Cable or Equivalent

Item 43: **Die Set for L-2.5CFB, L-3C2VS, L-3CFB, V-3C, V-3CFB, V-5C QTY 1**

Fits Canare L-2.5CFB, L-3C2VS, L-3CFB, V-3C, V-3CFB, V-5C, A/V Combo Series.
Also fits Belden 1694A, 1695A

Reference: Canare Die Set for L-2.5CFB, L-3C2VS, L-3CFB, V-3C, V-3CFB, V-5C or Equivalent

Item 44: **L-2.5CHD Video Coaxial Cable 300 Meter QTY 2**

Resistance	Inner Conductor: ≤64.3 Ω/km
	Outer Conductor: ≤16.9 Ω/km
Static Capacity	53 nF/km @ 1 kHz
Impedance	75±3 Ω
Maximum Transmission Distance	Composite NTSC: 1030.18' (314 m) @ 143 Mbps (SMPTE 259M)
	Composite PAL: 941.60' (287 m) @ 177 Mbps (ITU-R BT.601)
	Component (4:2:2): 777.55' (237 m) @ 270 Mbps (SMPTE 259M)
	Component (4:2:2) 16x9: 675.85' (206 m) @ 360 Mbps (SMPTE 259M)
	SDI: 551.18' (168 m) @ 540 Mbps (SMPTE 344M)
	HD-SDI: 216.53' (66 m) @ 1.5 Gbps (SMPTE 292M)
	HD 1080p: 150.91' (46 m) @ 3 Gbps (SMPTE 424M)
Length	984.25' (300 m)

Reference: Canare L-2.5CHD Video Coaxial Cable (984.25', Black) or Equivalent

Item 45: **L-4.5CHD Video Coaxial Cable 300 Meter QTY 3**

Outer Diameter	Nominal: 0.27" / 7 mm
	Inner Conductor: 0.04" / 1.02 mm
	Insulation: 0.18" / 4.57 mm
Conductor	Inner Conductor Composition: 1/1.02A (18) Quantity/mm (AWG)
	Outer Conductor Shield Coverage and Composition (91% or More): 0.14TA mm, 6 Ends, 24 Carriers
Resistance	Inner Conductor: ≤23.3 Ohms/km
	Outer Conductor: ≤9.9 Ohms/km
Static Capacity	53 nF/km @ 1 kHz
Impedance	75 ±3 Ohms
Attenuation	17.4 dB/100 m at 750 MHz
Maximum Transmission Distance	Composite NTSC: 1807.74' / 551 m @ 143 Mb/s (SMPTE 259M)
	Composite PAL: 1653.54' / 504 m @ 177 Mb/s (ITU-R BT.601)
	Component (4:2:2): 1361.55' / 415 m @ 270 Mb/s (SMPTE 259M)
	Component (4:2:2) 16 x 9: 1184.38' / 361 m @ 360 Mb/s (SMPTE 259M)
	SDI: 961.28' / 293 m @ 540 Mb/s (SMPTE 344M)
	HD-SDI: 377.29' / 115 m @ 1.5 Gb/s (SMPTE 292M)
	HD 1080p: 259.18' / 79 m @ 3 Gb/s (SMPTE 424M)
Length	984.25' / 300 m

Reference: Canare L-4.5CHD Video Coaxial Cable (984.25', Black) or Equivalent

Item 46: **Quad Microphone Cable (200 m, Black) QTY 3**

Applications	Microphones, portable applications, audio rack wiring, PA systems, and audio patch cords
Outer Diameter	0.2" / 6 mm, nominal
PVC Jacket Thickness	0.04" / 1.1 mm, nominal
Number of Conductors	4 (2 blue and 2 white)
Insulation	Type: IPE
	Thickness: 0.6" / 15.7 mm
	Dielectric Strength: 500 VAC/minute
	Insulation Resistance: 1,000 MOhms per 3' / 0.9 m
Conductor	AWG (AC): 24 (40/3.15 quantity/mm)
	Cross Sectional Area: 310 mm2
	AWG (Quad): 21
Pitch Twist Quad	0.8" / 20 mm
Shield Coverage	>95% TAC Braid
Conductor D.C.R.	<29.9 Ohms/1,000' / <9.8 Ohms/100 m
Shield D.C.R	<9.1 Ohms /1,000' / <3 Ohms/100 m
Nominal Capacitance	Between Twin Blue & White Conductors: 46 pF/ft / 150 pF/m
	Between Conductors & Shield: 57 pF/ft / 185 pF/m
Nominal Impedance	44 Ohms
Nominal Attenuation	0.9 V/1,000' / 0.3 V/100 m
Group Delay Time	1.80 ns/ft / 5.9 ns/m
Brittle Point	-56°F / -49°C
Length	656' (200 m)

Reference: Canare L-4E6S Star Quad Microphone Cable (656'/200 m, Black) or Equivalent

Item 47: **TC-1 Handheld Crimp Tool QTY 1**

Interchangeable die sets
Scissor ratchet action
Emergency release lever
Adjustable crimp force via drag washer
Hardened Swedish Steel construction
Rated at 50,000 dura-cycle lifespan

Reference: Canare TC-1 Handheld Crimp Tool or Equivalent

Item 48: **Coaxial Cable Stripper QTY 1**

Compatibility	Canare BNC, F, and RCA crimp plugs
Presets	Canare L-2.5CHD, L-4.5CHD+, Belden 1855A, 1505A, 1694A
Cable O.D.	Maximum: 0.158 to 0.433" (4 to 11 mm)
Dimensions	3.9 x 2 x 5" (99.4 x 51 x 126 mm)

Reference: Canare TS100U Coaxial Cable Stripper (5-in-1) or Equivalent

Item 49: **Mirrorless Full-Frame Camera QTY 6**

Lens Mount	Canon RF
Sensor Resolution	Actual: 21.4 Megapixel
	Effective: 20.1 Megapixel (5472 x 3648)
Sensor Type	36 x 24 mm (Full-Frame) CMOS
Image Stabilization	Sensor-Shift, 5-Axis
Built-In ND Filter	None
Capture Type	Stills & Video
Exposure Control	
Shutter Type	Electronic Shutter, Mechanical Focal Plane Shutter
Shutter Speed	Mechanical Shutter
	1/8000 to 30 Seconds
	Electronic Front Curtain Shutter
	1/8000 to 30 Seconds
	Electronic Shutter
	1/8000 to 0.5 Seconds
Bulb/Time Mode	Bulb Mode
ISO Sensitivity	Photo
	100 to 102,400 in Auto Mode (Extended: 100 to 204,800)
	Video
	100 to 25,600 (Extended: 100 to 204,800)
Metering Method	Center-Weighted Average, Evaluative, Partial, Spot
Exposure Modes	Aperture Priority, Auto, Manual, Program, Shutter Priority
Exposure Compensation	-3 to +3 EV (1/3, 1/2 EV Steps)
Metering Range	-3 to 20 EV
White Balance	Presets: Auto, Cloudy, Color Temperature, Custom, Daylight, Flash, Fluorescent (White), Shade, Tungsten
Continuous Shooting	Mechanical Shutter
	Up to 12 fps at 20 MP for up to 1000 Frames (JPEG) / 240 Frames (Raw)
	Electronic Shutter
	Up to 20 fps at 20 MP for up to 1000 Frames (JPEG) / 240 Frames (Raw)
Interval Recording	Yes
Self-Timer	2/10-Second Delay
Still Image Capture	
Image Sizes	3:2 Raw
	5472 x 3648
	3:2 JPEG
	5472 x 3648

	3648 x 2432
	2736 x 1824
	2400 x 1600
	4:3 JPEG
	4864 x 3648
	3248 x 2432
	2432 x 1824
	2112 x 1600
	16:9 JPEG
	5472 x 3072
	3648 x 2048
	2736 x 1536
	2400 x 1344
	1:1 JPEG
	3648 x 3648
	2432 x 2432
	1824 x 1824
	1600 x 1600
Aspect Ratio	1:1, 4:3, 16:9
Image File Format	JPEG, Raw, HEIF
Bit Depth	14-Bit
Internal Video Capture	
Recording Modes	H.265 4:2:2 10-Bit
	UHD 4K (3840 x 2160) at 23.98p/29.97p/59.94p [170 to 340 Mb/s]
	Full HD (1920 x 1080) at 23.98p/29.97p/59.94p/119.88p [28 to 180 Mb/s]
	H.264 4:2:0 8-Bit
	UHD 4K (3840 x 2160) at 23.98p/29.97p/59.94p [120 to 230 Mb/s]
	Full HD (1920 x 1080) at 23.98p/29.97p/59.94p/119.88p [12 to 120 Mb/s]
Recording Limit	Up to 29 Minutes, 59 Seconds
Video System	NTSC/PAL
Built-In Microphone Type	Stereo
Audio Recording	AAC Audio
	LPCM Audio
External Video Capture	
External Recording Modes	4:2:2 10-Bit via HDMI
	UHD 4K (3840 x 2160) up to 59.94p
IP Streaming	None

Interface	
Media/Memory Card Slot	Dual Slot: SD/SDHC/SDXC (UHS-II)
Video I/O	1 x Micro-HDMI Output
Audio I/O	1 x 3.5 mm TRS Stereo Headphone Output
	1 x 3.5 mm TRS Stereo Microphone Input
Other I/O	1 x USB Type-C (USB 3.2 / 3.1 Gen 1) Data Input/Output (Shared with Power Input)
	1 x Canon E3 (2.5 mm Sub-Mini) Input
Power I/O	1 x USB Type-C Input/Output
Wireless	Wi-Fi, Bluetooth
Global Positioning (GPS, GLONASS, etc.)	None
Monitor	
Size	3.0"
Resolution	1,620,000 Dot
Display Type	Free-Angle Tilting Touchscreen LCD
Viewfinder	
Type	Built-In Electronic (OLED)
Size	0.5"
Resolution	3,690,000 Dot
Eye Point	23 mm
Coverage	100%
Magnification	Approx. 0.76x
Diopter Adjustment	-4 to +2
Focus	
Focus Type	Auto and Manual Focus
Focus Mode	Continuous-Servo AF, Manual Focus, Single-Servo AF
Autofocus Points	Phase Detection: 1053
Autofocus Sensitivity	-6.5 to +20 EV
Flash	
Built-In Flash	No
Maximum Sync Speed	1/250 Second
Flash Compensation	-3 to +3 EV (1/3, 1/2 EV Steps)
Dedicated Flash System	eTTL
External Flash Connection	Hot Shoe

Reference: Canon EOS R6 Mirrorless Camera or Equivalent

Item 50: **LP-E6NH Lithium-Ion Battery (7.2V, 2130mAh) QTY 12**

Amp-Hours	2130 mAh
Chemistry	Lithium-Ion
Output Voltage	7.2 VDC
Dimensions (W x H x D)	1.51 x 0.83 x 2.24" / 38.4 x 21 x 56.8 mm
Packaging Info	
Package Weight	0.24 lb
Box Dimensions (LxWxH)	3.6 x 2.8 x 1.1"

Reference: Canon LP-E6NH Lithium-Ion Battery (7.2V, 2130mAh) or Equivalent

Item 51: PD-E1 USB Power Adapter QTY 2

USB power Adapter PD-E1 for Canon digital camera EOS R
USB power Adapter
AC cable
Package Dimensions : 6.858 L x 18.542 H x 8.636 W (centimeters)

Reference: Canon PD-E1 USB Power Adapter or Equivalent

Item 52: **RF 24-70mm f/2.8 L IS USM Lens QTY 1**

Focal Length	24 to 70mm
Maximum Aperture	f/2.8
Minimum Aperture	f/22
Lens Mount	Canon RF
Lens Format Coverage	Full-Frame
Angle of View	84° to 34°
Minimum Focus Distance	8.27" / 21 cm
Maximum Magnification	0.3x
Optical Design	21 Elements in 15 Groups
Diaphragm Blades	9, Rounded
Focus Type	Autofocus
Image Stabilization	Yes
Filter Size	82 mm (Front)
Dimensions (ø x L)	3.48 x 4.95" / 88.5 x 125.7 mm
Length at Maximum Extension	6.06" / 154 mm
Weight	1.98 lb / 900 g

Reference: Canon RF 24-70mm f/2.8 L IS USM Lens or Equivalent

Item 53: **RF 35mm f/1.8 IS Macro STM Lens QTY 2**

Focal Length	35mm
Maximum Aperture	f/1.8
Minimum Aperture	f/22
Lens Mount	Canon RF
Lens Format Coverage	Full-Frame
Angle of View	63°
Minimum Focus Distance	6.69" / 17 cm
Maximum Magnification	0.5x
Macro Reproduction Ratio	1:02
Optical Design	11 Elements in 9 Groups
Diaphragm Blades	9, Rounded
Focus Type	Autofocus
Image Stabilization	Yes
Filter Size	52 mm (Front)
Dimensions (ø x L)	2.93 x 2.47" / 74.4 x 62.8 mm
Length at Maximum Extension	2.44" / 62 mm
Weight	10.76 oz / 305 g

Reference: Canon RF 35mm f/1.8 IS Macro STM Lens or Equivalent

Item 54: **RF 50mm f/1.8 STM Lens QTY 3**

Focal Length	50mm
Maximum Aperture	f/1.8
Minimum Aperture	f/22
Lens Mount	Canon RF
Lens Format Coverage	Full-Frame
Angle of View	46°
Minimum Focus Distance	11.8" / 30 cm
Maximum Magnification	0.25x
Diaphragm Blades	7, Rounded
Focus Type	Autofocus
Image Stabilization	No
Filter Size	43 mm (Front)
Dimensions (ø x L)	2.7 x 1.6" / 69 x 40 mm
Weight	5.6 oz / 160 g

Reference: Canon RF 50mm f/1.8 STM Lens or Equivalent

Item 55: **RF 70-200mm f/2.8 L IS USM Lens QTY 1**

Focal Length	70 to 200mm
Maximum Aperture	f/2.8
Minimum Aperture	f/32
Lens Mount	Canon RF
Lens Format Coverage	Full-Frame
Angle of View	34° to 12°
Minimum Focus Distance	2.3' / 70 cm
Maximum Magnification	0.23x
Optical Design	17 Elements in 13 Groups
Diaphragm Blades	9, Rounded
Focus Type	Autofocus
Image Stabilization	Yes
Tripod Collar	Removable and Rotating
Filter Size	77 mm (Front)
Dimensions (ø x L)	3.54 x 5.75" / 89.9 x 146 mm
Length at Maximum Extension	8.03" / 204 mm
Weight	2.35 lb / 1070 g

Reference: Canon RF 70-200mm f/2.8 L IS USM Lens or Equivalent

Item 56: **RF 85mm f/2 Macro IS STM Lens QTY 2**

Focal Length	85mm
Maximum Aperture	f/2
Lens Mount	Canon RF
Lens Format Coverage	Full-Frame
Angle of View	28° 30'
Minimum Focus Distance	1.15' / 35.05 cm
Maximum Magnification	0.5x
Macro Reproduction Ratio	1:02
Optical Design	12 Elements in 11 Groups
Diaphragm Blades	9, Rounded
Focus Type	Autofocus
Image Stabilization	Yes
Filter Size	67 mm (Front)
Dimensions (ø x L)	3.07 x 3.56" / 78 x 90.5 mm
Length at Maximum Extension	3.54" / 90 mm
Weight	17.64 oz / 500 g

Reference: Canon RF 85mm f/2 Macro IS STM Lens or Equivalent

Item 57: **HDMI/SDI Cross Converter QTY 1**

Inputs	HDMI: 1 x Type A
	SD/HD.3G-SDI: 1 x BNC
Outputs	HDMI: 1
	SD/HD.3G-SDI: 3 x BNC (1 x Active Loop-Through, 2 x output)
SDI Formats Supported	3G: SMPTE 424M 2.97 and 2.967 Gb/s
	1080p: 60/59.94/50 Hz
	HD: SMPTE 292M/274M/296M 1.485 and 1.435 Gb/s
	1080i: 60/59.94/50 Hz
	1080p/psf: 30/29.97/25/24/23.98 Hz
	720p: 60/59.94/50/30/29.97/25/24/23.98 Hz
	SD: SMPTE 259M 270 Mb/s
	525i: 59.94
	625i: 50
Control Buttons	SDI output source from HDMI IN, SDI IN, Test Pattern Generator (TPG), and Scaler
	HDMI output type and source from HDMI IN, SDI IN, TPG or Scaler
	Scaler source, format and Aspect Controls
	Full control for Audio Meter Overlays
	Full control for Safe Action, Safe Title and Centre Cross Overlays
	Full control for Text Overlays
	Full control for Format Status Overlays
Power	5 to 32 VDC
	Pin Positive
Dimensions	3.1 x 4.8 x 1.2" / 79.5 x 123 x 29.5 mm

Reference: DECIMATOR MD-Cross V2 Miniature HDMI/SDI Cross Converter or Equivalent

Item 58: **SFF Desktop Computer QTY 2**

Operating System	Windows 10 Pro (64-Bit)
Chipset	Intel Q570
Processor	Intel Core i5-11500 (11th Gen)
CPU	2.7 to 4.6 GHz 6-Core
L3 Cache	12 MB
Memory Type	3200 MHz DDR4
Total Installed Memory	16 GB
Memory Configuration	2 x 8 GB (User-Replaceable)
Maximum Memory Capacity	128 GB
Memory Slot Type	288-Pin DIMM
Memory Slots	4 (2 Available)
Graphics Type	Integrated
GPU	Intel UHD Graphics 750
Total Drive Bays	2 x 2.5/3.5" (Internal)
	1 x Slim Optical Drive (External)
SSD Slots	1 x M.2 2280 PCIe (Unspecified Interface) x4 (In Use)
Total Installed Capacity	256 GB
Solid State Storage	1 x 256 GB M.2 NVMe PCIe
PCI Expansion	1 x PCIe 3.0 x16 (Available)
	1 x PCIe 3.0 x4 (Available)
	1 x M.2 2230 (E-Key) (Available)
Optical Drive	8x-Speed SuperMulti DVD Burner
Ports	5 x USB Type-A (USB 3.1 / USB 3.2 Gen 1)
	4 x USB Type-A (USB 2.0)
USB Type-C	1 x USB 3.1 / USB 3.2 Gen 2
Display	2 x DisplayPort 1.4
Audio	1 x 1/8" / 3.5 mm Headphone/Microphone Input/Output
	1 x 1/8" / 3.5 mm Line Input/Output
Ethernet	1 x RJ45 (Gigabit)
Keyboard	USB
Pointing Device	USB Mouse

Reference: Dell OptiPlex 5090 SFF Desktop Computer or Equivalent

Item 59: **27 Inch HDR FreeSync 4K IPS Monitor QTY 9**

Size	27"
Panel Type	IPS-Type LCD
Touchscreen	No
Resolution	3840 x 2160
Aspect Ratio	16:09
Pixels Per Inch (ppi)	163 ppi
Finish	Matte
Hardness Rating	3H
Maximum Brightness	400 cd/m2 (Peak in HDR Mode)
	350 cd/m2
Contrast Ratio	1000:01:00
Refresh Rate	60 Hz
Variable Refresh Technology	FreeSync
Bit Depth / Color Support	10-Bit (1.07 Billion Colors)
HDR Compatibility	HDR10
Color Gamut	99% sRGB
	99% CIE1931
Response Time	5 ms (GtG)
Viewing Angle (H x V)	178 x 178°
Dot Pitch	0.1554 x 0.1554 mm
Inputs/Outputs	1 x DisplayPort 1.4 Input
	2 x HDMI Input
	1 x USB Type-C (USB 3.1 / USB 3.2 Gen 1) Input/Output
	2 x USB Type-A (USB 3.1 / USB 3.2 Gen 1) Output
	1 x 3.5 mm Output
HDCP Support	Yes, Version 2.2
Built-In Speakers	Yes, 2 x 5 W
AC Input Power	100 to 240 VAC, 50 / 60 Hz
AC Input Power	VAC50 / 60 Hz
Power Adapter Type	External
USB Power Delivery	60 W (via USB Type-C)
Height Adjustment	4.33" / 110 mm
Rotation Adjustment	90° (0 to 90°)
Swivel Adjustment	None
Tilt Adjustment	-5 to 20°
Mounting-Hole Pattern	100 x 100 mm
Lock Slot	Yes, Kensington

Reference: LG 27BL85U-W 27" 16:9 HDR FreeSync 4K IPS Monitor or Equivalent

Item 60: **professional-quality aerial imaging drone QTY 1**

Maximum Takeoff Weight	2.0 lb / 895 g
Maximum Horizontal Speed	11.2 mph / 5 m/s (C Mode)
	33.6 mph / 15 m/s (N Mode)
	47.0 mph / 21 m/s (S Mode)
Maximum Ascent Speed	17.9 mph / 8 m/s
Maximum Descent Speed	13.4 mph / 6 m/s
Maximum Wind Resistance	26.8 mph / 12 m/s
Flight Ceiling	3.7 Miles / 6000 m
Maximum Flight Time	46 Minutes
Maximum Hover Time	40 Minutes
Maximum Tilt Angle	35°
Hovering Accuracy	±0.3' / 0.1 m Vertical with Vision Positioning
	±1.6' / 0.5 m Vertical with GPS
	±1.0' / 0.3 m Horizontal with Vision Positioning
	±1.6' / 0.5 m Horizontal
Maximum Angular Velocity	200°/s (Pitch)
Camera	
Sensor Type	4/3"-Type CMOS Sensor
Sensor Resolution	Effective: 20 Megapixel (5280 x 3956)
Focal Length	24mm (35mm Equivalent)
Field of View	84°
Maximum Aperture	f/2.8
Minimum Aperture	f/11
Minimum Focus Distance	3.3' / 1 m
ISO Sensitivity	Photo/Video
	100 to 6400
Shutter Speed	Electronic Shutter
	8 to 1/8000 Second
Video Format	5120 x 2700p at 24/25/30/48/50 fps (200 Mb/s MOV/MP4 via H.264/AVC, H.265/HEVC)
	4096 x 2160p at 24/25/30/48/50/60/120 fps (200 Mb/s MOV/MP4 via H.264/AVC, H.265/HEVC)
Broadcast Resolution	None
Still Image Support	DNG / JPEG / Raw
	20 MP (5280 x 3956)
Media/Memory Card Slot	Single Slot: SD/SDHC/SDXC [2 TB Maximum]
Photo Modes	Auto-Exposure Bracketing (AEB), Single Shot
Second Camera	
Video Resolution	4K: 3840 x 2160 @ 30 FPS, h.264/h.265
	FHD: 1920 x 1080 @ 30 FPS, h.264/h.265

Digital Zoom	4x
Sensor	1/2" CMOS
FOV	15°
Equivalent 35mm Focal Length	162 mm
Aperture	f/4.4
Focus	3 m to Infinity
ISO	Video: 100 to 6400
	Still Image: 100 to 6400
Shutter Speed	2 to 1/8000 per Second
Maximum Image Size	4000 x 3000
Photo Format	JPEG
Video Formats	MP4/MOV (MPEG-4 AVC/H.264, HEVC/H.265)
Photography Modes	Still Shot: 12 MP
Gimbal	
Number of Axes	3 (Pitch, Roll, Yaw)
Control Range	Pitch: -90 to 35°
	Yaw: -5 to 5°
Angular Speed	Pitch: 100°/s
Control Accuracy	±0.007°
Flight Control System	
GNSS Support	GPS, BeiDou, Galileo
3D Object Detection	
Operating Range	Not Specified by Manufacturer
Vision System	
Vision System	Downward, Forward, Backward, Left, Right
Operating Range	0.7 to 82.0' / 0.2 to 25.0 m
Obstacle Sensory Range	1.6 to 656.2' / 0.5 to 200.0 m
Forward Field of View	±90° (Horizontal)
	±103° (Vertical)
Downward Field of View	±130° (Front to Back)
	±160° (Side to Side)
Backward Field of View	±90° (Horizontal)
	±103° (Vertical)
Operating Environment	Surface with Clear Patterns at >15 lux
Remote Controller / Transmitter	
Operating Frequency	2.4 GHz (2.400 - 2.484)
	5.8 GHz (5.725 - 5.850)
Maximum Operating Distance	9.3 Miles / 15 km

Transmitter Power	26 dBm (2.4 G)
	26 dBm (5.8 G)
Connectivity	1 x USB Type-C
	1 x Micro-USB
	1 x Lightning
Mobile Device Compatibility	Devices up to 3.4" / 86 mm Wide and 0.4" / 10.2 mm Thick
Operating Temperature	32 to 104°F / 0 to 40°C
Flight Battery	
Battery Chemistry	Lithium-Ion Polymer (LiPo)
Capacity	5000 mAh / 77 Wh
Battery Configuration	4 S / 15.4 V
Charging Temperature	41 to 104°F / 5 to 40°C
Weight	11.8 oz / 335.5 g
Charger	
AC Input Power	100 to 240 VAC, 50 / 60 Hz at 2 A
Output Voltage	5 V, 2 A
	5 V, 5 A
	9 V, 5 A
	12 V, 5 A
	15 V, 4.3 A
	20 V, 3.25 A
Power Rating	65 W
General	
Number of Rotors	4
Operating Temperature	14 to 104°F / -10 to 40°C
Diagonal Size	15" / 380.1 mm
Overall Dimensions	3.8 x 3.6 x 8.7" / 96.3 x 90.3 x 221.0 mm (Folded)
	11.1 x 4.2 x 13.7" / 283.0 x 107.7 x 347.5 mm (Unfolded)

Reference: DJI Mavic 3 Fly More Combo or Equivalent

Item 61: **midrange drone QTY 1**

Maximum Horizontal Speed	62.3 ft/s / 19 m/s (S-Mode)
	39.4 ft/s / 12 m/s (P-Mode)
	16.4 ft/s / 5 m/s (T-Mode)
Maximum Ascent Speed	13.1 ft/s / 4 m/s
Maximum Descent Speed	16.4 ft/s / 5 m/s
Flight Ceiling	3.11 Miles / 5000 m
Maximum Flight Time	34 Minutes
Maximum Hover Time	33 Minutes
Maximum Tilt Angle	35°
Hovering Accuracy	±0.33' / 0.1 m Vertical with Vision Positioning
	±1.64' / 0.5 m Vertical with GPS
	±0.33' / 0.1 m Horizontal with Vision Positioning
	±4.92' / 1.5 m Horizontal with GPS
Maximum Angular Velocity	250°/s (Pitch)
	250°/s (Yaw)
	250°/s (Roll)
Camera	
Focal Length	24mm (35mm Equivalent)
Field of View	84°
Video Format	3840 x 2160p at 24/25/30/48/50/60 fps (MP4/MOV via H.264/AVC, H.265/HEVC, MPEG-4)
	2688 x 1512p at 24/25/30/48/50/60 fps (MP4/MOV via H.264/AVC, H.265/HEVC, MPEG-4)
	1920 x 1080p at 24/25/30/48/50/60/120/240 fps (MP4/MOV via H.264/AVC, H.265/HEVC, MPEG-4)
Media/Memory Card Slot	Single Slot: SD/SDHC/SDXC [256 GB Maximum]
Photo Modes	Auto-Exposure Bracketing (AEB), Burst Shooting, Interval, Single Shot
Gimbal	
Number of Axes	3 (Pitch, Roll, Yaw)
Control Range	Pitch: -135 to 45°
	Roll: -45 to 45°
	Yaw: -100 to 100°
Angular Speed	Pitch: 100°/s
Flight Control System	
GNSS Support	GPS, GLONASS
Vision System	
Vision System	Downward, Forward, Backward
Forward Field of View	71° (Horizontal)
	56° (Vertical)

Backward Field of View	44° (Horizontal)
	57° (Vertical)
Remote Controller / Transmitter	
Operating Frequency	2.4 GHz (2.400 - 2.484)
	5.8 GHz (5.725 - 5.850)
Maximum Operating Distance	6.21 Miles / 10 km at 2.4 G
Transmitter Power	26 dBm (2.4 G)
	26 dBm (5.8 G)
Connectivity	1 x Micro-USB
	1 x USB Type-C
	1 x Lightning
Output Power	38 W
USB Output Power	iOS: 5 VDC, 2 A
	Android: 5 VDC, 2 A
Mobile Device Compatibility	Devices up to 7.09" / 180 mm Wide and 0.4" / 10.16 mm Thick
App Operating System Requirements	Android
	iOS
Operating Temperature	32 to 104°F / 0 to 40°C
Flight Battery	
Battery Chemistry	Lithium-Ion Polymer (LiPo)
Capacity	3500 mAh / 40.42 Wh
Battery Configuration	3 S / 11.55 V
Maximum Charging Power	38 W
Charging Temperature	41 to 104°F / 5 to 40°C
Weight	6.98 oz / 198 g
General	
Number of Rotors	4
Operating Temperature	32 to 104°F / 0 to 40°C
Diagonal Size	11.9" / 302 mm
Overall Dimensions	3.8 x 3.3 x 7.1" / 97.0 x 84.0 x 180.0 mm (Folded)
	10.0 x 3.0 x 7.2" / 253.0 x 77.0 x 183.0 mm (Unfolded)
Weight	1.25 lb / 570 g

Reference: DJI Mavic Air 2 Fly More Combo or Equivalent

Item 62: **Gimbal Stabilizer QTY 1**

Number of Axes	3-Axis (Pitch, Roll, Yaw)
Rotation Range	Yaw (Pan): 360°
	Pitch (Tilt): -112 to 214°
	Roll: -95 to 240°
Follow Speed	Pan: 360°/s
	Tilt: 360°/s
	Roll: 360°/s
Load Capacity	10 lb / 4.5 kg
Camera Mounting Screw	1 x 1/4"-20 Male
Ports	2 x RSA
	3 x USB Type-C
Wireless Frequency	2.4 GHz (2.4 - 2.483)
Wireless Protocol	Bluetooth 5.0
Capacity (mAh)	1950 mAh
Capacity (Wh)	30.3 Wh
Battery Runtime	12 Hours
Battery Chemistry	Lithium-Ion Polymer (LiPo)
Voltage	15.4 VDC
Materials	Aluminum, Carbon Fiber, Plastic
Mounting	1 x 1/4"-20 Female
	1 x Cold Shoe Mount
Dimensions	16.1 x 10.2 x 7.7" / 410 x 260 x 195 mm
Weight	2.36 lb / 1.07 kg
	2.595 lb / 1.177 kg (with Camera Plate)
	2.948 lb / 1.337 kg (with Handlebar)
Case With Custom Foam Insert	
Carry/Transport Options	Handle
Color	Black
Type of Closure	Latch
Interior Type	Pre-Cut Foam
Security Lock	Accepts Padlock

Reference: DJI RS 2 Gimbal Pro Combo & Nanuk 930 Case Kit or Equivalent

Item 63: **5.0" Full HD HDMI On-Camera Monitor QTY 2**

Panel Type	IPS-Type LCD
Display Size	5.0" / 12.7 cm
Screen Resolution	1920 x 1080
Aspect Ratio	16:09
Viewing Angle	Horizontal: 80°
	Vertical: 80°
Touchscreen	No
Maximum Brightness	450 cd/m2
Contrast Ratio	1000:01:00
Dot Pitch	0.0571 x 0.019 mm
Bit Depth / Color Support	8-Bit (16.7 Million Colors)
Response Time	45 / 45 ms (Rise / Fall)
Finish	Matte
Color Gamut	95% NTSC
Image Controls	Anamorphic De-Squeeze, Color Temperature Selection, False Color, Histogram, Image Flip, Marker Color, Pixel-to-Pixel Zoom, R/G/B/Chroma Only, Screen Markers, Underscan, Zebra
I/O	
Video	1 x HDMI Type A (HDMI 1.4) Input
	1 x HDMI Type A (HDMI 1.4) Output
HDCP Support	No
Audio	1 x 1/8" / 3.5 mm Headphone Output
Video Format	HDMI (8-Bit)
	DCI 4K: 24
	UHD 4K: 23.98/24/25/29.97/30
	1080p: 23.98/24/25/29.97/30/50/59.94/60
	1080PsF: 23.98/24
	1080i: 50/59.94/60
	720p: 23.98/24/25/29.97/30/50/59.94/60
	480i
	576i
DC Input Power	6 to 24 VDC
Battery Type	1 x LP-E6, L-Series
Power Consumption	8 W
Mounting	1 x Cold Shoe
	2 x 1/4"-20 Female

Reference: FeelWorld F5 5.0" Full HD HDMI On-Camera Monitor with 4K Support and Tilt Arm or Equivalent

Item 64: **Studio Teleprompter Set QTY 1**

Reading Range	20' / 6.1 m
Beamsplitter Ratio	70/30
Beamsplitter Material	Glass
Monitor	
Size (Diagonal)	17" / 43.2 cm
Maximum Brightness	1000 cd/m2
Resolution	1280 x 1024
Viewing Angle (H x V)	170 x 160°
Input	1 x Composite (BNC)
	1 x HDMI
	1 x VGA
Self Reversing	Yes
AC Input Power	110 to 230 VAC, 50 / 60 Hz

Reference: Fortinge PROS17-HB 17" High-Bright Studio Teleprompter Set or Equivalent

Item 65: **In-Ear Stereo Monitor Headphones QTY 3**

Driver	Single Titanium
Frequency Response	20 Hz to 20 kHz, ±3 dB
Impedance	16 Ohms
Sensitivity	102 dB @ 1 kHz, 126 mV
Maximum Input Power	5 mW
Transducer Type	Dynamic
Plug	3.5 mm TRS
Cord Length	51" / 129.5 cm

Reference: Galaxy Audio EB4 Single-Driver In-Ear Stereo Monitor Headphones or Equivalent

Item 66: **LED Focusing LED Light QTY 2**

Photometrics	6° at 5600K:
	1049.8 fc / 11,300 Lux at 3.28' / 1 m
	55° at 5600K:
	260.1 fc / 2800 Lux at 3.28' / 1 m
Color Temperature	5600K ± 150K
Color Accuracy Standard	CRI 96
	TLCI 96
Cooling System	Passive
Dimming	Yes, 10 to 100%
Beam Angle	6 to 55°
Fixture Dimensions	8.5 x 4.3 x 3.9" / 215.0 x 108.0 x 100.0 mm
Fixture Weight	2.00 lb / 907 g
Battery Plate	1 x Sony L-Series (NP-F)
Fixture Mount	5/8" Receiver
Yoke Type	Yoke/Bracket
DC Input Power	15 VDC
Power Source	AC Adapter, External Battery, Integrated Battery
Max Power Consumption	30 W
Cable Length	6' / 1.83 m

Reference: Godox S30 LED Focusing LED Light or Equivalent

Item 67: **Action Camera QTY 1**

Sensor Type	CMOS Sensor
Sensor Resolution	Effective: 23 Megapixel
Fixed Focus	Yes
Media/Memory Card Slot	Single Slot: microSD/microSDHC/microSDXC
Video Format	5312 x 2988p at 24/25/30/50/60 fps (100 Mb/s MP4 via H.264/AVC, H.265/HEVC)
	5120 x 3840p at 24/25/30 fps (100 Mb/s MP4 via H.264/AVC, H.265/HEVC)
	3840 x 2160p at 24/25/30/50/60/100/120 fps (100 Mb/s MP4 via H.264/AVC, H.265/HEVC)
	4000 x 3000p at 24/25/30/50/60 fps (100 Mb/s MP4 via H.264/AVC, H.265/HEVC)
	2704 x 2028p at 50/60/100/120 fps (100 Mb/s MP4 via H.264/AVC, H.265/HEVC)
	2704 x 1520p at 50/60/100/120/200/240 fps (100 Mb/s MP4 via H.264/AVC, H.265/HEVC)
	1920 x 1080p at 24/25/30/50/60/100/120/200/240 fps (100 Mb/s MP4 via H.264/AVC, H.265/HEVC)
Slow Motion Mode	120 fps Recorded at 3840 x 2160p
	240 fps Recorded at 2704 x 1520p
Still Image Support	JPEG / Raw
	23 MP
Audio Format	AAC
	WAV
IP Streaming	RTMPS, RTMP: 1920 x 1080
Display Type	Fixed Touchscreen LCD
Size	2.27"
Secondary Display	Front: 1.4" LCD Live-View Monitor
Shutter Speed	1/30 - 1/2000 Seconds (Photo)
ISO Sensitivity	Photo/Video
	100 to 6400
Interval Recording	.5 Second
	1 Second
	2 Seconds
	5 Seconds
	10 Seconds
	30 Seconds
	60 Seconds
	120 Seconds
	300 Seconds

	1800 Seconds
	3600 Seconds
Burst Photo	25 Photos / 1 Second
Image Stabilization	Digital
Waterproof Depth Rating	33.0' / 10.0 m (Camera)
White Balance Modes	Auto
Creative Effects	Yes
Built-In Mic	Yes
Built-In Speaker	Yes
Wi-Fi	Yes
Bluetooth	Yes
Inputs	1 x USB 3.1 Type-C Charge & Video Output
Battery	Rechargeable Battery Pack, 1720 mAh
	Battery Charge Time: 3 hours
Charging Method	USB
Battery Chemistry	Lithium-Ion
Capacity	1720 mAh
Card Type	microSDXC
Storage Capacity	64 GB
Bus Type	UHS-I
Speed Class	10
UHS Speed Class	U3
Video Speed Class	V30
Application Performance Class	A2
Read Speed	Maximum: 160 MB/s
Write Speed	Maximum: 60 MB/s
	Minimum: 30 MB/s
Durability	Shockproof, Temperature Extremes, Waterproof, X-Ray Proof
Box Dimensions (LxWxH)	6 x 3.95 x 0.15"
Ruggard EVA Case	
Color	Black
Type of Closure	Zipper
Materials	Exterior: Molded Plastic

Reference: GoPro HERO10 Black Basic Kit or Equivalent

Item 68: **Studio Video Light Kit QTY 3**

Color Temperature	3200 to 5600K
Color Accuracy Standard	CRI 97
Cooling System	Passive
Dimming	Yes, 0 to 100%
Display	LCD
Number of LEDs	252
Expected Lamp Life	100000 Hours
Beam Angle	120°
Fixture Dimensions	10.6 x 10.3 x 1.6" / 26.9 x 26.2 x 4.1 cm
Battery Plate	2 x Sony L-Series (NP-F)
Fixture Mount	5/8" Receiver
Yoke Type	Yoke/Bracket
Remote Control Type	Proprietary Wireless
DC Input Power	15 VDC
Power Source	AC Adapter, External Battery
Max Power Consumption	40 W

Reference: GVM 800D-RGB LED Studio 3-Video Light Kit or Equivalent

Item 69: **NP-F750 4400mAh Batteries with Travel Chargers QTY 1**

Mount / Series Type	Sony L-Series
Chemistry	Lithium-Ion
Amp-Hours	4400 mAh
Output Voltage	7.2 VDC
Dimensions (W x H x D)	1.85 x 2.76" / 4.7 x 7 cm

Reference: GVM NP-F750 4400mAh Batteries with Travel Chargers (Set of 2) or Equivalent

Item 70: **Intel Core i9 Computer System QTY 3**

Form Factor	Desktop
Operating System	Windows 11 Pro
CPU Type	Intel Core i9 12th Gen
CPU Speed	12900KF (3.20 GHz)
GPU/VGA Type	NVIDIA GeForce RTX 3060
Memory Capacity	32GB DDR4
SSD	2 TB PCIe
Monitor	27 Inc IPS
Keyboard and mouse	Mechanical High DPI

Reference: Cobratype Gorgon Gaming Desktop PC - Intel Core i9 or Equivalent

Item 71: **Wireless Intercom System with Base Station QTY 1**

Number of Included Headsets	5 x Single-Sided Headset
Number of Included Transceivers	4 x Beltpack
	1 x Base Station
Headphone	
Earpiece Design	Over-Ear (Circumaural), Closed-Back
Number of Earpieces	Single Earpiece (Left or Right Side)
Sound Field	Mono
Impedance	32 Ohms
Controls/Microphone Location	Microphone: Adjustable Boom
Microphone	
Type	Dynamic
Mic Boom Location	Interchangeable (Left or Right Side)
Impedance	600 Ohms
Wireless Technology	Digital 1.9 GHz
Max Transmitters per Band	2
Wireless Modulation	GFSK
Duplex Mode	Full-Duplex (FDX)
Wireless Range	984.3' / 300 m
Audio Connector to Source	1 x 1/8" / 3.5 mm TRRS Male Straight
Battery	
Battery Chemistry	Lithium-Ion
Capacity (mAh)	1600 mAh
Base Station / Transmitter	
Users per System	5
I/O Connectors	4 x USB Type-A - Charging/Control Input/Output
	1 x USB Type-C - Control Input/Output
	1 x 1/8" / 3.5 mm - Audio Output
Antenna	Base Station:
	2 x External, BNC
Number of Charging Ports	4
AC/DC Power Adapter	7 to 36 VDC (Included)

Reference: ikan Livecom1000 Wireless Intercom System with Base Station, Beltpacks & Headsets or Equivalent

Item 72: **Studio and Field LED Light QTY 9**

Photometrics	110° at 3200K:
	539.9 fc / 5812 Lux at 2' / 0.6 m
	225.9 fc / 2432 Lux at 3.9' / 1.2 m
	117 fc / 1259 Lux at 5.9' / 1.8 m
	67 fc / 721 Lux at 7.9' / 2.4 m
	50 fc / 538 Lux at 9.8' / 3 m
	37 fc / 398 Lux at 11.8' / 3.6 m
	29 fc / 312 Lux at 13.8' / 4.2 m
	21.9 fc / 236 Lux at 15.7' / 4.8 m
	16.9 fc / 182 Lux at 17.7' / 5.4 m
	16 fc / 172 Lux at 20' / 6.1 m
	110° at 5600K:
	652 fc / 7018 Lux at 2' / 0.6 m
	240 fc / 2583 Lux at 3.9' / 1.2 m
	127 fc / 1367 Lux at 5.9' / 1.8 m
	73.9 fc / 796 Lux at 7.9' / 2.4 m
	54 fc / 581 Lux at 9.8' / 3 m
	41 fc / 441 Lux at 11.8' / 3.6 m
	32 fc / 344 Lux at 13.8' / 4.2 m
	25 fc / 269 Lux at 15.7' / 4.8 m
	20 fc / 215 Lux at 17.7' / 5.4 m
	16 fc / 172 Lux at 20' / 6.1 m
Color Temperature	3200 to 5600K
Color Accuracy Standard	CRI 96 at 3200K
	TLCI 96 at 3200K
	CRI 96 at 4400K
	TLCI 98 at 4400K
	CRI 97 at 5600K
	TLCI 98 at 5600K
Cooling System	Fan/Passive Combo
Dimming	Yes, 10 to 100%
Display	LED
Housing Material	Metal, Plastic
Beam Angle	110°
Fixture Dimensions	29.0 x 20.0 x 5.0" / 73.7 x 50.8 x 12.7 cm
Fixture Weight	18 lb / 8.2 kg
DMX Connection	5-Pin XLR
Yoke Mount	TVMP/ Hex Bolt
Fixture Mount	Combination 1-1/8" Stud and 5/8" Receiver
Yoke Material	Metal

Yoke Type	Yoke/Bracket
Remote Control Type	DMX
AC Input Power	100 to 220 VAC, 50 / 60 Hz
Power Source	AC Adapter
Max Power Consumption	205 W

Reference: ikan Lyra LBX20 Soft Panel 1 x 2 Studio and Field LED Light or Equivalent

Item 73: **Studio and Field LED Light QTY 7**

Photometrics	110° at 3200K:
	323.9 fc / 3487 Lux at 2' / 0.6 m
	148 fc / 1593 Lux at 3.9' / 1.2 m
	83 fc / 893 Lux at 5.9' / 1.8 m
	49 fc / 527 Lux at 7.9' / 2.4 m
	38 fc / 409 Lux at 9.8' / 3 m
	29 fc / 312 Lux at 11.8' / 3.6 m
	21.9 fc / 236 Lux at 13.8' / 4.2 m
	17.9 fc / 193 Lux at 15.7' / 4.8 m
	15 fc / 161 Lux at 17.7' / 5.4 m
	12 fc / 129 Lux at 20' / 6.1 m
	110° at 5600K:
	370.9 fc / 3993 Lux at 2' / 0.6 m
	166.9 fc / 1797 Lux at 3.9' / 1.2 m
	90.9 fc / 979 Lux at 5.9' / 1.8 m
	55.9 fc / 602 Lux at 7.9' / 2.4 m
	43.9 fc / 473 Lux at 9.8' / 3 m
	32 fc / 344 Lux at 11.8' / 3.6 m
	25 fc / 269 Lux at 13.8' / 4.2 m
	20 fc / 215 Lux at 15.7' / 4.8 m
	16 fc / 172 Lux at 17.7' / 5.4 m
	13.9 fc / 150 Lux at 20' / 6.1 m
Color Temperature	3200 to 5600K
Color Accuracy Standard	CRI 96 at 3200K
	TLCI 96 at 3200K
	CRI 97 at 4400K
	TLCI 98 at 4400K
	CRI 98 at 5600K
	TLCI 98 at 5600K
Cooling System	Fan/Passive Combo
Dimming	Yes, 10 to 100%
Display	LED
Housing Material	Metal, Plastic
Beam Angle	110°
Fixture Dimensions	45.0 x 18.0 x 5.0" / 114.3 x 45.7 x 12.7 cm
Fixture Weight	20 lb / 9.1 kg
DMX Connection	5-Pin XLR
Yoke Mount	TVMP/ Hex Bolt
Fixture Mount	Combination 1-1/8" Stud and 5/8" Receiver
Yoke Material	Metal

Yoke Type	Yoke/Bracket
Remote Control Type	DMX
AC Input Power	100 to 220 VAC, 50 / 60 Hz
Power Source	AC Adapter

Reference: ikan Lyra LBX30 Soft Panel 1 x 3 Studio and Field LED Light or Equivalent

Item 74: **Air-Cushioned Light Stand QTY 2**

Stand Type	1 x General Purpose Stand
Maximum Working Height	96" / 243.8 cm
Minimum Working Height	34" / 86.3 cm
Load Capacity	8 lb / 3.6 kg
Closed Length	29.6" / 75.2 cm
Stand/Column Top Mount	5/8" Stud with 1/4"-20 Male
Accepts Second Riser	No
Wheels	Optional
Air Cushioned	Yes
Footprint Diameter	36" / 91.4 cm
Leg Shape	Round: 20 mm
Finish	Black
Weight	2.05 lb / 1 kg

Reference: Impact Air-Cushioned Light Stand (Black, 8') or Equivalent

Item 75: **Heavy-Duty Air-Cushioned Light Stand QTY 3**

Stand Type	1 x General Purpose Stand
Maximum Working Height	114" / 290 cm
Minimum Working Height	48" / 123 cm
Load Capacity	22 lb / 10 kg
Closed Length	42" / 106.7 cm
Stand/Column Top Mount	5/8" Receiver
Included Adapter	1 x 5/8" Stud with Reversible 1/4"-20 & 3/8"-16 Male
Accepts Second Riser	No
Wheels	Optional
Air Cushioned	Yes
Footprint Diameter	52" / 132 cm
Leg Shape	Round: 25 mm
Finish	Black
Material	Aluminum
Weight	4.4 lb / 2 kg
Package Weight	5.5 lb
Box Dimensions (LxWxH)	43.8 x 15 x 10.8"

Reference: Impact Heavy-Duty Air-Cushioned Light Stand (Black, 9.5') or Equivalent

Item 76: **Impact Super Clamp with Ratchet Handle QTY 6**

Clamp Type	Jaw
Jaw Shape	Round
Jaw Opening	0.5 to 2.1 " / 1.3 to 5.3 cm
Load Capacity	33 lb / 15 kg
Weight	1.4 lb / 0.6 kg

Reference: Impact Super Clamp with Ratchet Handle or Equivalent

Item 77: **Impact Super Clamp with T-Handle QTY 18**

Clamp Type	Jaw
Jaw Shape	Round
Jaw Opening	0.5 to 2.1 " / 1.3 to 5.3 cm
Mount Type	1 x 5/8" Receiver
	1 x 1/4"-20 Male
Load Capacity	33 lb / 15 kg
Material	Aluminum
Weight	1.1 lb / 0.5 kg

Reference: Impact Super Clamp with T-Handle or Equivalent

Item 78: **Cabinet/Rack Screw Kit pack of 30 QTY 16**

Pack of 30 M5 Size Screws & Cage Nuts
For Mounting Posts with Square Holes

Reference: iStarUSA Cabinet/Rack Screw Kit or Equivalent

Item 79: **Cat 6A U/FTP 305M Roll QTY 3**

Cable Length	328.1' / 100 m
Ethernet Standards	Cat 6a
Compatibility	10GbE
Bandwidth Rating	500 MHz
Impedance	100 Ohms
Cable Configuration	Stranded
Outer Diameter	0.3" / 7.2 mm
Wire Gauge	23 AWG
Jacket Type	Low Smoke Halogen Free (LSHF)
Conductor	Annealed Copper
Insulation	HDPE

Reference: Kramer BC-UNIKAT 4-Pair 23-AWG Cat 6a U/FTP Video & LAN Cable (328', Blue) or Equivalent

Item 80: **Half White Diffusion Filter QTY 2**

Transmission	60% at 0.75 Stop under 6774K
Filter Material	Polyester
Heat Resistant	Yes
Diameter	1" / 2.5 cm (Core)
Size	5 x 25' / 1.5 x 7.6 m

Reference: LEE Filters 250 Half White Diffusion Filter (60" x 25' Roll with 1" Core) or Equivalent

Item 81: **Camera and Laptop Backpack QTY 2**

Carry/Transport Options	Backpack Straps, Handle, Waist Belt
Color	Black
Type of Closure	Zipper
Laptop/Tablet Compartment	Single Compartment: Fits 13" Laptop
Interior Type	Adjustable Dividers (Hook & Loop)
Monopod/Tripod Holder	Yes
Features	Accessory Loops
Water Resistance	Rain Cover
Maximum Volume	4.2 gal / 15.89 L
Materials	Exterior: Nylon, Polyester
Dimensions	Exterior
	18.5 x 11.81 x 7.09" / 46.99 x 30 x 18.01 cm
	Interior
	15.75 x 10.24 x 4.92" / 40.01 x 26.01 x 12.5 cm

Reference: Lowepro ProTactic BP 350 AW II Camera and Laptop Backpack (Black) or Equivalent

Item 82: **Universal Tripod Dolly QTY 3**

Tripod Foot Compatibility	Round Feet
Working Footprint	31" / 78.7 cm
Adjustable Footprint	Yes
Load Capacity	33 lb / 15 kg
Closed Length	17" / 43.2 cm
Height	5.0" / 12.7 cm
Locking Wheels	Yes
Wheel Diameter	2" / 5.1 cm
Material	Aluminum, Plastic

Reference: Magnus DWF-2 Universal Tripod Dolly or Equivalent

Item 83: **Tripod System with Fluid Head QTY 3**

Load Capacity	8.8 lb (4 kg)
Maximum Height	59.0" (150 cm)
Minimum Height	27.6" (70.1 cm)
Folded Length	30.3" (77 cm)
Leveling Bubble/Illuminated	Yes/no
Weight	7.9 lb (3.6 kg)
Counter Balance System	Fixed counter-balance spring @ 3.3 lb (1.5 kg)
Quick Release/Wedge Plate	Yes/no
Balance Plate	Yes
Slide Range	+20/-25mm
Tilt Drag	Yes
Tilt Range	+90/-60°
Tilt Lock	Yes
Pan Lock	Yes
Head Attachment Fitting	65 mm half bowl
Material	Anodized aluminum
Leg Stages/Sections	02-Mar
Leg Lock Type	Flip locks
Independent Leg Spread	No
Spiked/Retractable Feet	Yes/yes
Center Brace	Yes (mid-level)

Reference: Magnus VT-4000 Tripod System with Fluid Head or Equivalent

Item 84: **Cine/Video Dolly for Tripods with Spiked Feet QTY 3**

Tripod Foot Compatibility	Spiked Feet
Working Footprint	44.1" / 112 cm
Load Capacity	132 lb / 60 kg
Closed Length	25.5" / 64.7 cm
Locking Wheels	Yes
Wheel Diameter	5" / 12.5 cm
Cable Guards	Yes
Material	Aluminum

Reference: Manfrotto 114MV Cine/Video Dolly for Tripods with Spiked Feet or Equivalent

Item 85: **Aluminum Tripod with Ground Spreader QTY 2**

Camera Plate Features	Quick Release, Sliding Balance Plate
Camera Plate Type	504PLONG
Camera Mounting Screw	1 x 1/4"-20 Male
	1 x 3/8"-16 Male
Base Mount	3/8"-16 Female
Drag Control	Tilt: Continuous
	Pan: Continuous
Drag Type	Fluid
Vertical Tilt	None
Panning Range	360°
Independent Pan Lock	Yes
Independent Tilt Lock	Yes
Material	Aluminum
Load Capacity	26.46 lb / 12 kg
Counter Balance	Incremental 4-Step Plus 0 (0 to 14.3 lb /)
Bubble Level	1

Reference: Manfrotto 504X Fluid Video Head & MVTTWINGA Aluminum Tripod with Ground Spreader or Equivalent

Item 86: **Aluminum Tripod Pro Ground-Twin Kit 100 QTY 1**

Load Capacity	29.8 lb / 13.5 kg
Maximum Height	67.7" / 172 cm
Minimum Height	18.9" / 48 cm
Folded Length	33.1" / 84 cm
Leveling Bubble/Illuminated	Yes, illuminated
Weight	21.6 lb / 9.8 kg
Counter Balance System	Yes
Quick Release/Wedge Plate	Yes
Tilt Drag	Yes
Tilt Range	-60 to +90°
Tilt Lock	Yes
Pan Range	360°
Pan Lock	Yes
Material	Aluminum
Head Attachment Fitting	100 mm bowl
Leg Stages/Sections	02-Mar
Leg Lock Type	Flip
Center Brace	Ground-level spreader

Reference: Manfrotto 509HD Video Head & 545GB Aluminum Tripod Pro Ground-Twin Kit 100 or Equivalent

Item 87: **Twin Charger for Canon LP-E6, LP-E6N, LP-E6NH, LP-E8, and LP-E17 Batteries QTY 2**

AC Input Power	100 to 240 VAC, 50 / 60 Hz
Number of Battery Bays	2
Multi-Bay Charging Modes	Simultaneous
Indicator	LCD Display
USB Port	1 x USB Type-A

Reference: Manfrotto ProCUBE Professional Twin Charger for Canon LP-E6, LP-E6N, LP-E6NH, LP-E8, and LP-E17 Batteries or Equivalent

Item 88: **Pan Bar for Select Manfrotto Video Heads QTY 6**

For 502AH, 502A, 504HD, 509HD, and 526
For Nitrotech N8 and N12

Reference: Manfrotto Telescopic PVC-Free Pan Bar for Select Manfrotto Video Heads or Equivalent

Item 89: **Travel Tripod Kit with Fluid Head QTY 3**

Camera Plate Features	Sliding Balance Plate, Quick Release
Camera Mounting Screw	1 x 1/4"-20 Male with Locating Pin
Safety Lock	Yes
Plate Dimensions	4.17 x 1.61" / 10.6 x 4.1 cm
Base Mount	3/8"-16 Female
Camera Platform Adjustment	Yes
Pan Handle Fittings	1 x Fixed
Bubble Level	1
Base Diameter	1.97" / 50 mm
Drag Type	Fluid
Panning Range	360°
Independent Pan Lock	Yes
Independent Tilt Lock	Yes
Leg Lock Type	Twist Lock
Leg Positions	3 Positions
Independent Leg Spread	Yes
Leg Sections	4
Leg Diameter	0.98" / 25 mm (Maximum)
Feet Features	Rubber, Retractable, Spiked
Spreader	None
Load Capacity	22.05 lb / 10 kg
Maximum Working Height	57" / 144.78 cm
Minimum Working Height	20" / 50.80 cm
Closed Length	16.4" / 41.7 cm
Materials	Aluminum

Reference: miliboo MUFA Aluminum Travel Tripod Kit with Fluid Head or Equivalent

Item 90: **All-in-One Desktop Computer QTY 1**

Operating System	Windows 10 Pro
Processor	Intel Core i5-11400 (11th Gen)
CPU	2.6 to 4.4 GHz 6-Core
L3 Cache	12 MB
Memory Type	3200 MHz DDR4
Total Installed Memory	8 GB
Memory Configuration	1 x 8 GB (User-Replaceable)
Maximum Memory Capacity	64 GB
Memory Slot Type	260-Pin SO-DIMM
Memory Slots	2 (1 Available)
Graphics Type	Integrated
GPU	Intel UHD Graphics 730
Total Drive Bays	1 x 2.5" (Internal)
SSD Slots	1 x M.2 2280 SATA / PCIe (Unspecified Interface) (In Use)
Total Installed Capacity	250 GB
Solid State Storage	1 x 250 GB M.2 NVMe PCIe
PCI Expansion	None
Optical Drive	None
Ports	4 x USB Type-A (USB 3.1 / USB 3.2 Gen 1)
	2 x USB Type-A (USB 2.0)
	1 x DE-9/DB-9 (Serial)
Display	1 x HDMI 1.4 Output
Audio	1 x 1/8" / 3.5 mm Headphone Input
	1 x 1/8" / 3.5 mm Microphone Output
Built-In Speakers	2
Built-In Microphones	Yes
Media/Memory Card Slot	None
Ethernet	1 x RJ45 (Gigabit)
Wi-Fi	Wi-Fi 6 (802.11ax); Dual-Band (2.4 & 5 GHz)
MU-MIMO Support	Yes
Bluetooth	5.1
NFC	No
Keyboard	Wireless
Pointing Device	Wireless Mouse

Reference: MSI 23.8" Pro AP241 All-in-One Desktop Computer (Black) or Equivalent

Item 91: **Core i5 Desktop Computer QTY 1**

Operating System	Windows 10 Home
Chipset	Intel B560
Processor	Intel Core i5-11400F (11th Gen)
CPU	2.6 to 4.4 GHz 6-Core
L3 Cache	12 MB
Memory Type	3000 MHz DDR4
Total Installed Memory	16 GB
Memory Configuration	2 x 8 GB (User-Replaceable)
Maximum Memory Capacity	128 GB
Memory Slot Type	288-Pin DIMM
Memory Slots	4 (2 Available)
Graphics Type	Dedicated
GPU	NVIDIA GeForce RTX 3060 with 12 GB GDDR6 VRAM
Total Drive Bays	3 x 2.5" (Internal)
	2 x 2.5/3.5" (Internal)
SSD Slots	1 x M.2 SATA / PCIe 4.0 x4
	1 x M.2 PCIe 3.0 x4
Total Installed Capacity	500 GB
Solid State Storage	1 x 500 GB M.2 NVMe PCIe
PCI Expansion	1 x PCIe 4.0 x16
	2 x PCIe 3.0 x1
Ports	2 x USB Type-A (USB 3.1 / USB 3.2 Gen 2)
	4 x USB Type-A (USB 3.1 / USB 3.2 Gen 1)
	2 x USB Type-A (USB 2.0)
Display	3 x DisplayPort 1.4a Output
	1 x HDMI 2.1a Output
Audio	1 x 1/8" / 3.5 mm Headphone Output
	1 x 1/8" / 3.5 mm Microphone Input
Ethernet	1 x RJ45 (2.5GbE)
Wi-Fi	Wi-Fi 6 (802.11ax); Dual-Band (2.4 & 5 GHz)
MU-MIMO Support	Yes
Bluetooth	5.1
Keyboard	USB
Pointing Device	USB Mouse

Reference: MSI Codex R Gaming Desktop Computer or Equivalent

Item 92: **8-Port Gigabit PoE+ Compliant Managed AV Switch with SFP QTY 2**

Ports	8 x 10/100/1000 Mb/s Gigabit Ethernet (RJ45) PoE+
	2 x 10/100/1000 Mb/s Gigabit SFP
	2 x 10/100/1000 Mb/s Gigabit Ethernet (RJ45) (Console)
	2 x USB Type-C (Console)
	1 x USB Type-A
Layer Services Supported	Layer 2 Support, Layer 3 Support
Supported Protocols	DHCP Server
	IGMP Snooping
	IPv4
	IPv6
	Link Aggregation
	Port Mirroring
	SNMPv1
	SNMPv2c
	SNMPv3
Jumbo Frames Support	12,000 Bytes
VLAN Groups	4093
Security Features	DHCP Snooping
	DoS Attack Prevention
	RADIUS Authentication
	Storm Control
Access Control List	1024
SNMP Support	1, 2, 3
Supported IEEE Standards	802.1ab, 802.1ak, 802.1as, 802.1d, 802.1p, 802.1q, 802.1qat, 802.1qav, 802.1s, 802.1v, 802.1w, 802.1x, 802.3, 802.3ab, 802.3ac, 802.3ad, 802.3af, 802.3at, 802.3u
Latency	2.2 μs
Forwarding Rate	17.86 Mpps
Switching Bandwidth	24 Gb/s
Packet Buffer	16 Mb
Processor	1.25 GHz ARM A9
Memory	2 GB
PoE per Port	30 W
Power Supply Type	Internal
Rack Form Factor	1 RU

Reference: Netgear AV Line M4250 GSM4212P 8-Port Gigabit PoE+ Compliant Managed AV Switch with SFP (125W) or Equivalent

Item 93: **40-Port Gigabit PoE+ Compliant Managed AV Switch with SFP+ (960W) QTY 1**

	40 x 10/100/1000 Mb/s Gigabit Ethernet (RJ45) PoE+
	8 x 10Gb SFP+
Ports	2 x 10/100/1000 Mb/s Gigabit Ethernet (RJ45) (Console)
	2 x USB Type-C (Console)
	1 x USB Type-A
Layer Services Supported	Layer 2 Support, Layer 3 Support
	DHCP Server
	IGMP Snooping
	IPv4
	IPv6
Supported Protocols	Link Aggregation
	Port Mirroring
	SNMPv1
	SNMPv2c
	SNMPv3
Jumbo Frames Support	12,000 Bytes
VLAN Groups	4093
	DHCP Snooping
Security Features	DoS Attack Prevention
	RADIUS Authentication
	Storm Control
Access Control List	1024
SNMP Support	1, 2, 3
Supported IEEE Standards	802.1ab, 802.1ak, 802.1as, 802.1d, 802.1p, 802.1q, 802.1qat, 802.1qav, 802.1s, 802.1v, 802.1w, 802.1x, 802.3, 802.3ab, 802.3ac, 802.3ad, 802.3af, 802.3at, 802.3u
Latency	0.7 to 2.7 µs
Forwarding Rate	178.56 Mpps
Switching Bandwidth	240 Gb/s
Packet Buffer	32 Mb
Processor	1.8 GHz ARM Cortex-A57 Quad-Core
Memory	2 GB
Power Draw	1197.00 W (Max)
PoE Power Budget	960 W
Power Supply Type	Internal
Rack Form Factor	1 RU

Reference: Netgear AV Line M4250 GSM4248PX 40-Port Gigabit PoE+ Compliant Managed AV Switch with SFP+ (960W) or Equivalent

Item 94: **BNC Cable Connector QTY 100**

Connection Type	BNC 75 Ω
Gender	Male
Contact Resistance	≤3 m Ω inner (inner)
Comment	≤2
Dielectric Strength	1.5 kVDC (peak)
Insulation Resistance	>5 G Ω
Impedance	75 Ω
Rated Voltage	500 V
VSWR	≤1.050 / >32 dB up to 1 GHz ≤1.065 / >30 dB up to 2 GHz ≤1.100 / >26 d
Cable O.D.	0.28" (7.3 mm)
Cable Retention	>30 N (center)
Crimp Mass	7.36 Hex crimp (shield) acc. MIL22520/5-41(A)
Crimp Size	1.6 Square crimp (pin) acc. IEC 60803 (die designation 2)
Insertion Force	<25 N
Lifetime	>1,000 mating cycles
Locking Device	Bayonett
Cable	Anchoring: Jacket crimping
Contacts	Brass (CuZn35Pb2), 0.2 μm AuCo (Center contact)
Insert	PTFE
Shell	Brass (CuZn39Pb3)
Shell Plating	Optalloy

Reference: Neutrik NBNC75BTU11 rearTWIST BNC Cable Connector or Equivalent

Item 95: **Female 3-Pin XLR Connector QTY 100**

Connection Type	XLR
Gender	female
Capacitance between contacts	≤ 4 pF
Contact resistance	≤ 3 mΩ
Dielectric strength	1,5 kVdc
Insulation resistance	> 10 GΩ (initial)
Rated current per contact	16 A
Rated voltage	< 50 V
Cable O.D.	3.5 - 8.0 mm
Insertion force	≤ 20 N
Withdrawal force	≤ 20 N
Lifetime	> 1000 mating cycles
Wiresize	max. 2.5 mm²
Wiresize	max. 14 AWG
Locking device	Latch lock
Boot	Polyurethan
Contact plating	2 µm Ag
Contacts	Bronze (CuSn8)
Insert	Polyamide (PA66)
Locking element	Zinc diecast (ZnAl4Cu1) / Ck 67 (spring)
Shell	Zinc diecast (ZnAl4Cu1)
Shell plating	Nickel
Strain relief	Polyacetal (POM)

Reference: Neutrik NC3FXX Female 3-Pin XLR Connector or Equivalent

Item 96: **Male 3-Pin XLR Connector QTY 100**

Connection Type	XLR
Gender	male
Capacitance between contacts	≤ 4 pF
Contact resistance	≤ 3 mΩ
Dielectric strength	1,5 kVdc
Insulation resistance	> 10 GΩ (initial)
Rated current per contact	16 A
Rated voltage	< 50 V
Cable O.D.	3.5 - 8.0 mm
Insertion force	≤ 20 N
Withdrawal force	≤ 20 N
Lifetime	> 1000 mating cycles
Wiresize	max. 2.5 mm²
Wiresize	max. 14 AWG
Wiring	Solder contacts
Locking device	Latch lock
Boot	Polyurethan
Contact plating	2 µm Ag
Contacts	Brass (CuZn39Pb3)
Insert	Polyamide (PA66)
Locking element	Zinc diecast (ZnAl4Cu1)
Shell	Zinc diecast (ZnAl4Cu1)
Shell plating	Nickel
Strain relief	Polyacetal (POM)

Reference: Neutrik NC3MXX Male 3-Pin XLR Connector or Equivalent

Item 97: **Narrow-Profile Stereo (TRS) 1/4" Phone Connector QTY 50**

Connection Type	Plug
Gender	male
Contact resistance	depends on mating connector mΩ
Dielectric strength	1 kVdc
Insulation resistance	> 2 GΩ (initial)
Rated current per contact	depends on mating connector A
Rated voltage	< 50 V
Cable O.D.	4 - 7 mm
Lifetime	> 1000 mating cycles
Wiresize	1 mm²
Wiresize	18 AWG
Wiring	Solder contacts
Bushing	Polyacetal (POM) + PU
Contact plating	2 µm Ni (Su)
Contacts	Brass (CuZn39Pb3)
Insert	Polyamide (PA 6.6 30 % GR)
Shell	Zinc diecast (ZnAl4Cu1)
Shell plating	Nickel
Strain relief	Polyacetal (POM)

Reference: Neutrik NP3X Narrow-Profile Stereo (TRS) 1/4" Phone Connector or Equivalent

Item 98: **Digital ED 40-150mm f/2.8 PRO Lens QTY 2**

Focal Length	40 to 150mm (35mm Equivalent Focal Length: 80 to 300mm)
Maximum Aperture	f/2.8
Minimum Aperture	f/22
Lens Mount	Micro Four Thirds
Lens Format Coverage	Micro Four Thirds
Angle of View	30° to 8.2°
Minimum Focus Distance	2.3' / 70 cm
Maximum Magnification	0.21x
Optical Design	16 Elements in 10 Groups
Diaphragm Blades	9, Rounded
Focus Type	Autofocus
Image Stabilization	No
Tripod Collar	Removable and Rotating
Filter Size	72 mm (Front)
Dimensions (ø x L)	3.13 x 6.3" / 79.4 x 160 mm
Length at Maximum Extension	6.28" / 159.5 mm
Weight	1.67 lb / 760 g

Reference: Olympus M.Zuiko Digital ED 40-150mm f/2.8 PRO Lens or Equivalent

Item 99: **35-100mm f/2.8 II POWER O.I.S. Lens QTY 4**

Focal Length	35 to 100mm (35mm Equivalent Focal Length: 70 to 200mm)
Maximum Aperture	f/2.8
Minimum Aperture	f/22
Lens Mount	Micro Four Thirds
Lens Format Coverage	Micro Four Thirds
Angle of View	34° to 13°
Minimum Focus Distance	2.79' / 85 cm
Maximum Magnification	0.1x
Optical Design	18 Elements in 13 Groups
Diaphragm Blades	7, Rounded
Focus Type	Autofocus
Image Stabilization	Yes
Filter Size	58 mm (Front)
Dimensions (ø x L)	2.65 x 3.93" / 67.4 x 99.9 mm
Length at Maximum Extension	3.94" / 100 mm
Weight	12.59 oz / 357 g

Reference: Panasonic Lumix G X Vario 35-100mm f/2.8 II POWER O.I.S. Lens or Equivalent

Item 100: **Backpack 25L & Shoulder Bag QTY 2**

Carry/Transport Options	Backpack Straps with Sternum Strap, Handle
Color	Black
Type of Closure	Zipper
Laptop/Tablet Compartment	Single Compartment: Fits Laptop
Monopod/Tripod Holder	Yes
Security Lock	None
Water Resistance	Rain Cover
Maximum Volume	0.88 ft³ / 0.03 m³
Materials	Exterior: Polyester
Dimensions	Exterior
	18.9 x 12.6 x 9.06" / 48 x 32 x 23 cm
	Interior
	18.5 x 11.8 x 6.7" / 47 x 30 x 17 cm
Weight	5.51 lb / 2.5 kg

Reference: PGYTECH OneMo Backpack 25L & Shoulder Bag (Twilight Black) or Equivalent

Item 101: **Handheld Dynamic Performance Microphone QTY 2**

Transducer	Dynamic
Polar Pattern	Supercardioid
Frequency Response	50 Hz to 16 kHz
Impedance	600 Ohms ±30% at 1 kHz
Sensitivity	-54 dB ±3 dB (0 dB= 1 V/Pa @ 1 kHz)
Output Connector	3-pin XLR
Cable Length	16.4' (5 m)
Dimensions	7 x 2.1" (17.8 x 5.3 cm)
Weight	0.7 lb (317.5 g)

Reference: Polsen HDM-16-S Handheld Dynamic Performance Microphone or Equivalent

Item 102: **Compact Table Tripod Mic Holder Mount with Height Adjustment QTY 3**

Height	4.7 to 8.7" / 11.94 to 22.10 cm
Base Type	Tripod
Base Dimensions	7.5 x 7" / 19.05 x 17.78 cm
Adjustment Type	One-Handed Clutch
Leg Sections	3
Mounting Thread	5/8"-27 Male
Material	Steel
Finish	Black
Weight	0.47 lb / 0.21 kg

Reference: Pyle Pro Desktop Microphone Stand & Compact Table Tripod Mic Holder Mount with Height Adjustment or Equivalent

Item 103: **GO Omnidirectional Microphone for Wireless GO Systems QTY 3**

Form Factor	Lavalier
Sound Field	Mono
Polar Pattern	Omnidirectional
Pad	None
High-Pass Filter	None

Reference: Rode Lavalier GO Omnidirectional Lavalier Microphone for Wireless GO Systems (Black) or Equivalent

Item 104: **Complete Vocal Recording Kit QTY 1**

Primary Applications	Studio Recording
Form Factor	Large Diaphragm Mic / Stand/Boom Mount
Intended Sound Sources	Vocals, Speech/Voice Over, Acoustic Guitar, Percussion
Sound Field	Mono
Operating Principle	Pressure Gradient
Capsule	Condenser
Diaphragm	1" / 25.40 mm
Polar Pattern	Cardioid
Orientation	Side Address
Circuitry	Solid-State (JFET)
Frequency Range	20 Hz to 20 kHz
Maximum SPL	137 dB SPL
Impedance	100 Ohms
Sensitivity	-31.9 dBV/Pa at 1 kHz
Output Level	13.7 mV (1 kHz)
Dynamic Range	132 dB
Signal-to-Noise Ratio	88 dB SPL (1 kHz)
Equivalent Noise Level	5 dB A-Weighted
Output Connectors (Analog)	1 x XLR 3-Pin Male (on Mic)
Cable Length	20' / 6.1 m
Operating Voltage	24 V (Phantom Power)
	48 V (Phantom Power)
Mounting	Shockmount (Included)
Included Case	Mic Sock
Included Filters	Pop Filter
Dimensions	ø: 2 x L: 7.5" / ø: 5 x L: 19 cm
Weight	11.5 oz / 326 g

Focusrite Scarlett 2i2 2x2 USB Audio Interface (3rd Generation) Specs

Gain/Trim Range	Inputs:
	Up to +56 dB
Analog Audio I/O	2 x Combo XLR-1/4" TRS Balanced/Unbalanced Mic/Line/Hi-Z Input (Front Panel)
	2 x 1/4" TRS Balanced Monitor Output
	1 x 1/4" TRS Unbalanced Headphone Output (Front Panel)
Phantom Power	48 V, Selectable On/Off (Applied to All Inputs)
Host Connection / USB	1 x USB Type-C (USB 2.0)
Frequency Response	Inputs:

	20 Hz to 20 kHz ±0.1 dB
Max Input Level	Mic Inputs:
	+9 dBu (Min Gain)
	Hi-Z Inputs:
	+12.5 dBu (Min Gain)
	Line Inputs:
	+22 dBu (Min Gain)
Max Output Level	Line/Monitor Outputs:
	+15.5 dBu at 0 dBFS
	Headphone Outputs:
	+7 dBu
Impedance	Mic Inputs:
	3 Kilohms
	Hi-Z Inputs:
	1.5 Megohms
	Line Inputs:
	60 Kilohms
	Line Outputs:
	430 Ohms
	Headphone Outputs:
	< 1 Ohm
Dynamic Range	Mic Inputs:
	111 dBA
	Hi-Z Inputs:
	110 dBA
	Line Inputs:
	110.5 dBA
	Line Outputs:
	108 dBA
	Headphone Outputs:
	104 dBA
THD+N	Mic Inputs:
	< 0.0012%
	Hi-Z Inputs:
	< 0.03%
	Line Inputs:
	< 0.002%
	Line Outputs:
	< 0.002%
	Headphone Outputs:
	< 0.002%

EIN	Mic Inputs:
	-128 dBu A-Weighted
Sample Rates	Up to 192 kHz (AD/DA Conversion)
Bit Depths	Up to 24-Bit (AD/DA Conversion)
Sync Sources	Internal
OS Compatibility	macOS 10.12 or Later
	macOS 11
	Windows 7 or Later
	iPadOS
Compatible Software (Not Included)	Any Core Audio (Mac) Compliant Software
Included Plug-Ins	Dynamics:
	Focusrite Red 3
	Drawmer S73
	Equalization:
	Focusrite Red 2
	Virtual Instruments:
	XLN Audio
	Reverb & Room:
	Softube TSAR-1R Reverb
	Delay:
	Softube Tube Delay
	Harmonic & Tape:
	Softube Saturation Knob
Mobile Device Compatibility	iPad Pro (with USB Type-C)
Required Hardware	Available USB 2.0 Port
	USB Cable (Included)
Internet Connection	Required for Software/Driver Download
Power Requirements	USB Bus Power
Form Factor	Tabletop
Channels of I/O	Analog:
	2 Inputs / 2 Outputs at 192 kHz
Max Sample Rate/Resolution	192 kHz / 24-Bit
Number of Mic Preamps	2
Input Level Adjustment	2 x Knob
Expansion Slots	None
Anti-Theft Features	Kensington Security Slot

Audio-Technica ATH-M30x Closed-Back Monitor Headphones (Black) Specs

Earpiece Design	Over-Ear (Circumaural), Closed-Back
Earpiece Swivel	Yes, 15°
Earpiece Connection / Wearing Style	Headband
Foldable	Yes
Driver Type	Dynamic
Driver Size	1.6" / 40 mm
Magnet Type	Neodymium
Voice Coil	Copper-Clad Aluminum Wire
Impedance	47 Ohms
Frequency Response	15 Hz to 22 kHz
Sensitivity	96 dB
Maximum Power Handling	1300 mW
Audio Connector to Source	1 x 1/8" / 3.5 mm TRS Male Straight
Connector Plating	Gold
Adapter (Included)	1/4" TRS
Cable Design	Single-Sided
Audio Connector to Earpiece	Not Specified by Manufacturer
Cable Length	9.8' / 3 m
Cable Color	Black
Color	Black
Auray RF-5P-B Reflection Filter (Metal) Specs	
Filter Type	Reflection Filter
Filter Material	Foam, Metal
Dimensions	15.8 x 12.6 x 10.2" / 400.0 x 320.0 x 260.0 mm
Auray RFMS-580 Reflection Filter Tripod Mic Stand Specs	
Height	42 to 68" / 106.68 to 172.72 cm
Collapsed Size	35.2" / 89.41 cm
Weight	5.2 lb / 2.36 kg
Auray COHH-2 Clamp-On Headphones Holder For Mic Stand Specs	
Dimensions	1.75 x 3 x 5.25" / 4.4 x 7.6 x 13.3 cm
Weight	0.25 lb / 113.4 g

Reference: Rode NT1A Complete Vocal Recording Kit with Focusrite Scarlett 2i2 USB Interface, Headphones & More or Equivalent

Item 105: **VideoMic Pro+ Camera-Mount Shotgun Microphone Kit with Micro Boompole, Windshield, and Extension Cable QTY 1**

Form Factor	Stand/Boom Mount
Sound Field	Mono
Operating Principle	Line Gradient
Capsule	Electret Condenser
Diaphragm	0.55" / 13.97 mm
Polar Pattern	Supercardioid
Orientation	End Address
Circuitry	Solid-State (JFET)
High-Pass Filter	75 Hz
	150 Hz
Tone Adjustment	High Boost:
	+5 dB at 7 kHz
Gain Adjustment	-10 dB to +20 dB
Indicators	1 x Single LED (Power, Status)
	6 x Single LED (Status)
On-Board Controls	Gain/Sensitivity, High-Pass Filter, HF, On/Off
Windscreen	Foam (Included)
Frequency Range	20 Hz to 20 kHz
Maximum SPL	133 dB SPL
Off-Axis Rejection	5 dB at 60°
	23 dB at 120°
	>10 dB at 180°
Impedance	200 Ohms
Sensitivity	-33.6 dBV/Pa at 1 kHz
Output Level	7.6 dBu (Max)
Dynamic Range	118.8 dB
Signal-to-Noise Ratio	79.8 dB
Equivalent Noise Level	14 dB A-Weighted
Output Connectors (Analog)	1 x 1/8" / 3.5 mm TRS
Number of Conductors	2
Battery Type	1 x Rode LB-1
	2 x AA
Battery Chemistry	Lithium-Ion
Approximate Battery Life	100 Hours
Color	Black
Mounting	3/8"-16 Female, Camera/Shoe-Mount, Shockmount (via Integrated Hardware)
Dimensions	ø: 4.37 x L: 6.69" / ø: 111 x L: 169.93 mm
Weight	4.3 oz / 122 g

Package Weight	0.72 lb
Box Dimensions (LxWxH)	8.7 x 5.1 x 3.1"

Rode Micro Boompole 3-Section Telescopic Boompole Specs	
Material	Anodized aluminum
Sections	3
Minimum Length	2.67' (84.4 cm)
Maximum Length	6.75' (206 cm)
Maximum Diameter	1.3" (3.3 cm)
Weight	12.7 oz (396 g)

Rode VC1 3.5mm TRS Microphone Extension Cable For Cameras (10') Specs	
Connector 1	1 x 1/8" / 3.5 mm TRS Male
Connector 2	1 x 1/8" / 3.5 mm TRS Female
Contact Plating	Gold
Cable Length	10' / 3 m
Conductor Material	Copper
Weight	1.8 oz / 52 g

Auray Windbuster For Rode VideoMic Pro With Rycote Lyre Shockmount Specs	
Material	Faux Fur

Reference: Rode VideoMic Pro+ Camera-Mount Shotgun Microphone Kit with Micro Boompole, Windshield, and Extension Cable or Equivalent

Item 106: **Compact Digital Wireless Microphone System/Recorder QTY 3**

Wireless Technology	Digital 2.4 GHz
Included Transmitters	1 x Bodypack with Microphone
Diversity	Non-Diversity
Max Operating Range	656.2' / 200 m
Max Transmitters per Band	4
Built-In Recorder	Yes
Timecode Support	No
Control App Support	Yes, Available for Android/iOS/macOS/Windows
OS Compatibility	macOS
	Windows
	iOS
	iPadOS
	Android
Latency	3.5 to 4 ms
Encryption	128-Bit
Receiver	
Receiver Type	Beltpack
Mounting Options	Belt Clip (with Included Hardware)
Antenna	1 x Internal
Number of Audio Channels	2
Audio I/O	1 x 1/8" / 3.5 mm TRS Female Unbalanced Mic Output
Gain Range	-24 to 0 dB (12 dB Steps)
Network I/O	None
USB/Lightning Connectivity	1 x USB Type-C Female (Audio, Bus Power, Charging)
Power Requirements	Battery or Bus Power (USB)
Battery Type	1 x Built-In Rechargeable (Included)
Battery Charging Time	2 Hours
Approx. Battery Life	7 Hours
Display & Indicators	1 x Graphic LCD (AF Level, Battery Status, Metering, RF Level, Transmitter Battery Status)
Dimensions	1.7 x 1.8 x 0.7" / 4.4 x 4.5 x 1.8 cm
Weight	1.1 oz / 32 g
Transmitter Type	Bodypack with Microphone
RF Output Power	Not Specified by Manufacturer
Audio I/O	1 x 1/8" / 3.5 mm TRS Female Unbalanced Input
Pad	None
Muting	Off/On Switch
Audio Input Level	-20 dBV (Max)
Auto-Level Control	No
Recorder Sample Rates	WAV:

	48 kHz (Record)
Recorder Bit Depths	24-Bit
Audio File Formats	WAV
Gain Range	+20 dB
Signal Processing	None
Sync Method	Proprietary
Antenna	1 x Internal
Power Requirements	Battery or Bus Power (USB)
Battery Type	1 x Built-In Rechargeable (Included)
Battery Charging Time	2 Hours
Approx. Battery Life	7 Hours
USB/Lightning Connectivity	1 x USB Type-C (Bus Power, Charging)
Display & Indicators	1 x LED (Sync)
	1 x LED (Battery Status)
Dimensions	1.7 x 1.8 x 0.7" / 4.4 x 4.5 x 1.8 cm
Weight	1.1 oz / 30 g
Microphone Type	Integrated
Sound Field	Mono
Operating Principle	Pressure Operated
Capsule	Electret Condenser
Polar Pattern	Omnidirectional
Frequency Range	50 Hz to 20 kHz
Equivalent Noise Level	22 dB A-Weighted
Maximum SPL	100 dB SPL

Reference: Rode Wireless GO II Single Compact Digital Wireless Microphone System/Recorder (2.4 GHz, Black) or Equivalent

Item 107: **Battery Pouch for 2 DSLR Batteries QTY 4**

Type of Closure	Hook-and-Loop
Material	Nylon
Carrying/Transport Options	Belt Loop
Padded	No
Exterior Dimensions	3 x 4.25 x 0.5" / 7.62 x 10.79 x 1.27 cm

Reference: Ruggard Battery Pouch for 2 DSLR Batteries (Black) or Equivalent

Item 108: **EDC-125L Electronic Dry Cabinet QTY 1**

Volume Capacity	4.4 ft³ / 125 L
Humidity Control	35 to 60% (+/-7%)
Security	Key Lock
Control Interface	LCD Display
AC Input Power	110 to 240 VAC, 50 / 60 Hz
Power Consumption	<15 W
Construction	Glass, Steel
Interior Dimensions (W x H x D)	16.1 x 32.2 x 15.3" / 40.9 x 81.8 x 38.9 cm
Exterior Dimensions (W x H x D)	16.1 x 35.4 x 15.4" / 40.9 x 89.9 x 39.1 cm

Reference: Ruggard EDC-125L Electronic Dry Cabinet (125L) or Equivalent

Item 109: **Neoprene Protective Pouch for Memory Cards QTY 4**

Card Type	1 x PC and
	6 x CompactFlash / CFast or
	6 x microSD or
	6 x miniSD or
	6 x MMC or
	6 x Memory Stick or
	6 x SD or
	6 x SmartMedia or
	6 x XD or
	6 x XQD
Material	Neoprene
Closure Type	Zipper
Carry/Transport Options	Belt Loop
Dimensions	5.3 x 3.4 x 1.4" / 13.5 x 8.6 x 3.5 cm
Weight	2.5 oz / 70 g

Reference: Ruggard Neoprene Protective Pouch for Memory Cards or Equivalent

Item 110: **43" Class HDR 4K UHD Smart LED TV QTY 4**

Size	42.5"
Display Technology	LCD
Aspect Ratio	16:09
Resolution	3840 x 2160
HDR Compatibility	HDR10, Hybrid Log Gamma
Auto Low Latency Mode (ALLM)	Yes
Video System	NTSC
TV Tuner	ATSC, Clear QAM
Input Ports	2 x HDMI Type A
	1 x F-Type (RF Antenna)
Output Ports	1 x TOSLINK Optical (Digital Audio)
HDCP Support	Yes
Audio Return Channel (ARC)	ARC, eARC
Wi-Fi	Wi-Fi 5 (802.11ac)
Bluetooth	Bluetooth 4.2 (Audio Output)
USB Ports	1 x USB 2.0 (Audio, Control, Photo, Video)
Ethernet	LAN
Power	20 W
Virtual Assistant Support	Amazon Alexa, Google Assistant, Samsung Bixby
Smart TV	Tizen
Wall Mounting	200 x 200 mm
AC Input Power	120 VAC, 50 / 60 Hz

Reference: Samsung TU7000 43" Class HDR 4K UHD Smart LED TV or Equivalent

Item 111: **USB Type-C Multi-Card Reader/Writer QTY 3**

Memory Card Slots	1 x SDXC (UHS-II [312 MB/s])
	1 x microSDXC (UHS-II [312 MB/s])
	1 x CompactFlash Type I (UDMA 7 [167 MB/s])
Host Connection	10-Pin Micro-USB Female [USB 3.1 / 3.2 Gen 1 (5 Gb/s)]
Power Source	USB Bus Power

Reference: SanDisk ImageMate PRO USB Type-C Multi-Card Reader/Writer or Equivalent

Item 112: **Single-Sided Communication Headset with 5-Pin XLRM Cable for Telex System QTY 6**

Number of Earpieces	Single Earpiece
Driver Size	1.6" / 40.0 mm
Impedance	400 Ohms
Total Harmonic Distortion (THD)	5%
Microphone	
Type	Dynamic
Pickup Pattern	Cardioid (Unidirectional)
Frequency Response	50 Hz to 18 kHz
Sensitivity	-79 dB
Impedance	200 Ohms

Reference: Senal SMH-1010CH Single-Sided Communication Headset with 5-Pin XLRM Cable for Telex System or Equivalent

Item 113: **Single-Sided Communication Headset with Pigtail Cable (No Connector) QTY 2**

Number of Earpieces	Single Earpiece
Driver Size	1.6" / 40.0 mm
Impedance	400 Ohms
Total Harmonic Distortion (THD)	5%
Microphone	
Type	Dynamic
Pickup Pattern	Cardioid (Unidirectional)
Frequency Response	50 Hz to 18 kHz
Sensitivity	-79 dB
Impedance	200 Ohms

Reference: Senal SMH-1010CH Single-Sided Communication Headset with Pigtail Cable (No Connector) or Equivalent

Item 114: **Wireless Omni Lavalier Microphone System (A: 516 to 558 MHz) QTY 6**

Wireless Technology	Analog UHF
Number of RF Channel Frequencies	1680
Included Transmitters	1 x Bodypack with Microphone
Diversity	Antenna Diversity
RF Frequency Band	A:
	516 to 558 MHz
RF Bandwidth	42 MHz
Frequency Step Size	25 kHz
Max Operating Range	330' / 100.6 m (Line of Sight)
Max Transmitters per Band	12
Deviation	48 kHz (Peak)
Modulation	Wideband FM
Receiver Type	Camera-Mount
Mounting Options	Shoe-Mount (with Included Hardware)
Antenna	1 x Flexible Whip, Fixed
Number of Audio Channels	1
Audio I/O	1 x 1/8" / 3.5 mm TRS Female Unbalanced Output (Lockable)
Gain Range	42 dB (6 dB Steps)
Audio Output Level	+12 dBu
Squelch	5 to 25 dBμV
Adjacent Channel Isolation	>65 dB
Power Requirements	Battery
Battery Type	2 x AA (Included)
	1 x Sennheiser Accupack (Not Included)
Approx. Battery Life	8 Hours (Alkaline)
Display & Indicators	1 x Backlit LCD (Battery Status, Output Level, RF Level)
Housing	Metal
Operating Temperature	14 to 131°F / -10 to 55°C
Dimensions	2.5 x 3.2 x 0.9" / 64 x 82 x 24 mm
Weight	5.6 oz / 160 g (with Batteries)
Transmitter Type	Bodypack
RF Output Power	30 mW
Audio I/O	1 x 1/8" / 3.5 mm TRS Female Unbalanced Input (Lockable)
Muting	Mute Switch
Audio Input Level	3 V RMS (Max)
Gain Range	60 dB (3 dB Steps)
Frequency Response	80 Hz to 18 kHz (Mic)

	25 Hz to 18 kHz (Line)
Sync Method	IR
Antenna	1 x Flexible Whip, Fixed (Beltpack)
Power Requirements	Battery
Battery Type	2 x AA (Included)
	1 x Sennheiser Accupack (Not Included)
Approx. Battery Life	8 Hours (Alkaline)
Display & Indicators	1 x Backlit LCD (Audio Level, Battery Status, Signal Strength)
Housing	Metal
Dimensions	2.5 x 3.2 x 0.9" / 64 x 82 x 24 mm
Weight	5.6 oz / 160 g (with Batteries)
Microphone Type	Lavalier
Sound Field	Mono
Capsule	Electret Condenser
Polar Pattern	Omnidirectional
Frequency Range	50 Hz to 18 kHz
Equivalent Noise Level	36 dB
Maximum SPL	130 dB SPL Peak
Sensitivity	20 mV/Pa
Output Connectors	1 x 1/8" / 3.5 mm TRS Male Unbalanced (Lockable)
Cable Length	5.25' / 1.6 m
Operating Voltage	7.5 V

Reference: Sennheiser EW 112P G4 Camera-Mount Wireless Omni Lavalier Microphone System (A: 516 to 558 MHz) or Equivalent

Item 115: **Wireless Omni Lavalier Microphone System (G: 566 to 608 MHz) QTY 4**

Wireless Technology	Analog UHF
Number of RF Channel Frequencies	1680
Included Transmitters	1 x Bodypack with Microphone
Diversity	Antenna Diversity
RF Frequency Band	G:
	566 to 608 MHz
RF Bandwidth	42 MHz
Frequency Step Size	25 kHz
Max Operating Range	330' / 100.6 m (Line of Sight)
Max Transmitters per Band	12
Deviation	48 kHz (Peak)
Modulation	Wideband FM
Receiver Type	Camera-Mount
Mounting Options	Shoe-Mount (with Included Hardware)
Antenna	1 x Flexible Whip, Fixed
Number of Audio Channels	1
Audio I/O	1 x 1/8" / 3.5 mm TRS Female Unbalanced Output (Lockable)
Gain Range	42 dB (6 dB Steps)
Audio Output Level	+12 dBu
Squelch	5 to 25 dBµV
Adjacent Channel Isolation	>65 dB
Power Requirements	Battery
Battery Type	2 x AA (Included)
	1 x Sennheiser Accupack (Not Included)
Approx. Battery Life	8 Hours (Alkaline)
Display & Indicators	1 x Backlit LCD (Battery Status, Output Level, RF Level)
Housing	Metal
Operating Temperature	14 to 131°F / -10 to 55°C
Dimensions	2.5 x 3.2 x 0.9" / 64 x 82 x 24 mm
Weight	5.6 oz / 160 g (with Batteries)
Transmitter Type	Bodypack
RF Output Power	30 mW
Audio I/O	1 x 1/8" / 3.5 mm TRS Female Unbalanced Input (Lockable)
Muting	Mute Switch
Audio Input Level	3 V RMS (Max)
Gain Range	60 dB (3 dB Steps)
Frequency Response	80 Hz to 18 kHz (Mic)

	25 Hz to 18 kHz (Line)
Sync Method	IR
Antenna	1 x Flexible Whip, Fixed (Beltpack)
Power Requirements	Battery
Battery Type	2 x AA (Included)
	1 x Sennheiser Accupack (Not Included)
Approx. Battery Life	8 Hours (Alkaline)
Display & Indicators	1 x Backlit LCD (Audio Level, Battery Status, Signal Strength)
Housing	Metal
Dimensions	2.5 x 3.2 x 0.9" / 64 x 82 x 24 mm
Weight	5.6 oz / 160 g (with Batteries)
Microphone Type	Lavalier
Sound Field	Mono
Capsule	Electret Condenser
Polar Pattern	Omnidirectional
Frequency Range	50 Hz to 18 kHz
Equivalent Noise Level	36 dB
Maximum SPL	130 dB SPL Peak
Sensitivity	20 mV/Pa
Output Connectors	1 x 1/8" / 3.5 mm TRS Male Unbalanced (Lockable)
Cable Length	5.25' / 1.6 m
Operating Voltage	7.5 V

Reference: Sennheiser EW 112P G4 Camera-Mount Wireless Omni Lavalier Microphone System (G: 566 to 608 MHz) or Equivalent

Item 116: **Circumaural Closed-Back Monitor Headphones QTY 3**

Earpiece Design	Over-Ear (Circumaural), Closed-Back
Earpiece Swivel	Yes, 90°
Earpiece Connection / Wearing Style	Headband
Foldable	Yes
Driver Type	Dynamic
Magnet Type	Neodymium
Impedance	64 Ohms
Active Noise Cancellation	No
Contact Pressure	6 N
Performance	
Frequency Response	8 Hz to 25 kHz
Maximum Sound Pressure Level (SPL)	113 dB
Maximum Power Handling	500 mW
Noise Attenuation	Up to 32 dB (Passive)
Total Harmonic Distortion (THD)	0.10%
Wired Connectivity	
Audio Connector to Source	1/8" / 3.5 mm TRS
Connector Plating	Gold
Adapter (Included)	1/4" TRS
Cable Design	Single-Sided, Coiled
Audio Connector to Earpiece	Hard-Wired
Cable Length	4.3' / 1.3 m

Reference: Sennheiser EW 112P G4 Camera-Mount Wireless Omni Lavalier Microphone System (G: 566 to 608 MHz) or Equivalent

Item 117: **Sensor Swab Ultra (12-Pack, 24mm) QTY 1**

End points for cleaner corners
Textured surface to collect more debris
Clean room sealed so you get the purest swab
Welded seams stabilize swab fabric
Channeled handle for a better grip

Reference: Photographic Solutions Type 3 Sensor Swab Ultra (12-Pack, 24mm) or Equivalent

Item 118: **Cat 7/7a/6a STP Shielded External Ground RJ45 Standard Modular Plug with Bar45 (50-Piece Jar) QTY 3**

Type	RJ45 Male
Quantity	50
Contact Plating	50 µ Gold
	100 µ Nickel
Contact Material	Bronze
Shielded	Yes
Conductor Diameter	0.06" / 1.45 mm
Contact Resistance	20 milliohms
Supported Cable Diameter	0.3" / 8 mm
Wire Gauge Supported	23 to 23 AWG
Cable Types Supported	Solid, Stranded
Networking Type	Cat 6a, Cat 7, Cat 7a
Plug Material	Polycarbonate
Compliance	RoHS, UL, FCC
Flame Resistance Rating	UL94V-0
Mating Cycles	2000

Reference: Simply45 Cat 7/7a/6a STP Shielded External Ground RJ45 Standard Modular Plug with Bar45 (50-Piece Jar) or Equivalent

Item 119: **Case for Blackmagic Design Atem Television Studio QTY 1**

Material of Construction	Case: Polypropylene copolymer resin
	Foam: PE foam
Dimensions	Exterior: 20.25 x 16.93 x 8.78" / 51.44 x 43 x 22.3 cm
Weight	10 lb / 4.5 kg

Reference: SKB iSeries Case for Blackmagic Design Atem Television Studio or Equivalent

Item 120: **128GB SF-G Tough Series UHS-II SDXC Memory Card QTY 6**

Quantity	1
Card Type	SDXC
Storage Capacity	128 GB
Bus Type	UHS-II
Speed Class	10
UHS Speed Class	U3
Video Speed Class	V90
Read Speed	Maximum: 300 MB/s
Write Speed	Maximum: 299 MB/s
	Minimum: 90 MB/s
Durability	Dustproof, Magnet-Proof, Shockproof, Static Proof, Temperature Extremes, UV Light Resistant, Waterproof, X-Ray Proof
Operating Temperature	-13 to 185°F / -25 to 85°C
Built-in Write-Protect Switch	No

Reference: Sony 128GB SF-G Tough Series UHS-II SDXC Memory Card or Equivalent

Item 121: **64GB SF-G Tough Series UHS-II SDXC Memory Card QTY 6**

Quantity	1
Card Type	SDXC
Storage Capacity	64 GB
Bus Type	UHS-II
Speed Class	10
UHS Speed Class	U3
Video Speed Class	V90
Read Speed	Maximum: 300 MB/s
Write Speed	Maximum: 299 MB/s
	Minimum: 90 MB/s
Durability	Dustproof, Magnet-Proof, Shockproof, Static Proof, Temperature Extremes, UV Light Resistant, Waterproof, X-Ray Proof
Operating Temperature	-13 to 185°F / -25 to 85°C
Built-in Write-Protect Switch	No

Reference: Sony 64GB SF-G Tough Series UHS-II SDXC Memory Card or Equivalent

Item 122: **6-Input / 4-Track Multi-Track Field Recorder with Onboard Omni Microphones QTY 2**

Number of Tracks	4
Max Sample Rate/Resolution	96 kHz / 24-Bit
Microphone	Built-In Omnidirectional Electret Condenser Stereo Pair, A/B Configuration
Built-In Speaker	No
Display	Monochrome LCD (Backlit)
Memory Card Support	SD (64 MB to 2 GB)
	SDHC (4 GB to 32 GB)
	SDXC (48 GB to 128 GB)
Internal Storage	None
Audio File Formats	BWF, WAV
Sample Rates	WAV:
	44.1 / 48 / 96 kHz
Bit Depth	16 / 24-Bit
Signal Processing & FX	Delay, Limiter, Low-Cut Filter
Timecode Support	No
Recording Time	WAV 44.1 kHz/16-Bit:
	1 Hr 41 Mins per GB (Stereo)
	WAV 48 kHz/16-Bit:
	1 Hr 33 Mins per GB (Stereo)
	WAV 96 kHz/16-Bit:
	46 Mins per GB (Stereo)
	WAV 44.1 kHz/24-Bit:
	1 Hr 7 Mins per GB (Stereo)
	WAV 48 kHz/24-Bit:
	1 Hr 2 Mins per GB (Stereo)
	WAV 96 kHz/24-Bit:
	31 Mins per GB (Stereo)
Analog I/O	4 x Combo XLR-1/4" TRS Female Balanced Line/Mic Input (Lockable)
	1 x 1/8" / 3.5 mm TRS Female Unbalanced Mic Input
	1 x 1/8" / 3.5 mm TRS Female Unbalanced Camera Input
	1 x 1/8" / 3.5 mm TRS Female Unbalanced Camera/Line Output
	1 x 1/8" / 3.5 mm TRS Female Unbalanced Headphone Output
	1 x 2.5 mm TRS Female Remote Input
Digital I/O	None
Phantom Power	+24 / 48 V ± 4 V (Selectable on Individual Inputs)

Phantom Power Current	10 mA per Channel
Plug-In Power	Yes
Host Connection	1 x Micro-USB (USB 2.0)
Frequency Response	Line Outputs, Mic/Line Inputs:
	20 Hz to 20 kHz +0.5/-2 dB (at 48 kHz, JEITA)
	20 Hz to 40 kHz +0.5/-3 dB (at 96 kHz, JEITA)
Gain/Trim Range	Balanced Inputs:
	+21 dB to +63 dB
	Unbalanced Inputs:
	+3 dB to +38 dB
Max Input Level	Mic Inputs:
	0 dBu
	Line Inputs:
	+20 dBu
	1/8" Inputs:
	+10 dBV
	Camera Inputs:
	+6 dBV
Max Output Level	Camera Outputs:
	-24 dBV
	Line Outputs:
	+6 dBV
Headphone Output Power	20 mW per Channel
Impedance	Mic Inputs:
	2 Kilohms
	Line Inputs:
	≥10 Kilohms
	1/8" / 3.5 mm Inputs:
	10 Kilohms
	Camera Outputs:
	200 Ohms
	Line Outputs:
	200 Ohms
SNR	≥92 dB
THD	≤0.02%
EIN	-120 dBu
Power Options	Batteries, USB Bus Power, AC/DC Power Adapter
Battery Type	4 x AA (Not Included)
Approximate Battery Life	WAV 44.1 kHz/16-Bit:
	6 Hours (AA Alkaline, 2 Channels, Phantom Off, Recording)

	3.5 Hours (AA Alkaline, 2 Channels, Phantom On, Recording)
	11 Hours (AA Alkaline, Recording, Built-In Mic)
	6.25 Hours (AA NiMH, 2 Channels, Phantom Off, Recording)
	3.25 Hours (AA NiMH, 2 Channels, Phantom On, Recording)
	10.5 Hours (Alkaline, Recording, Built-In Mic)
AC/DC Power Adapter	5 VDC at 1 A (Not Included)
Mounting Options	1/4"-20 Female, Shoe Mount

Reference: Tascam DR-70D 6-Input / 4-Track Multi-Track Field Recorder with Onboard Omni Microphones or Equivalent

Item 123: **Earset Kit for Intercom Systems QTY 8**

Complete Earset Kit
Includes RTV-04 Earset Receiver
Includes CMT-98 Headphone Cable
Includes ET-4 Acoustic Eartube

Reference: Telex CES-2 Earset Kit for Intercom Systems or Equivalent

Item 124: **UF-RJ45-10G CopperModule QTY 9**

Form Factor	SFP+
Ports	1 x RJ45
Maximum Networking Distance	328.08' / 100 m
Maximum Data Rate	10 Gb/s
Operating Temperature	32 to 158°F / 0 to 70°C

Reference: Ubiquiti Networks UF-RJ45-10G CopperModule or Equivalent

Item 125: **15mm f/2 FE Zero-D Lens for Canon RF QTY 1**

Focal Length	15mm
Maximum Aperture	f/2
Minimum Aperture	f/22
Lens Mount	Canon RF
Lens Format Coverage	Full-Frame
Angle of View	110°
Minimum Focus Distance	5.91" / 15 cm
Maximum Magnification	0.25x
Optical Design	12 Elements in 9 Groups
Diaphragm Blades	5
Focus Type	Manual Focus
Image Stabilization	No
Filter Size	72 mm (Front)
Dimensions (ø x L)	2.6 x 3.23" / 66 x 82 mm
Weight	1.1 lb / 500 g

Reference: Venus Optics Laowa 15mm f/2 FE Zero-D Lens for Canon RF or Equivalent

Item 126: **Server Rack - 45U with Doors,Sides and Casters QTY 1**

Product Type	Rack
Category of Accessory	Racks and rack hardware
Package Content	2 sets of 19" EIA rails, bracket, doors, side panels, split locking side panels
Height (Rack Units)	45
Rack Size	19"
Weight Limit	2998 lbs
Features	Tool-less
Width	23.6 inch
Depth	41.9 inch
Height	83.9 inch

Reference: VERTIV Liebert VR Server Rack - 45U with Doors,Sides and Casters or Equivalent

Item 127: **4K Live Production, Streaming & Mixing Software QTY 2**

	Minimum
Operating System	Windows 7 or Higher
	Recommended
	Windows 8.1
	Minimum
CPU	2 GHz Dual-Core
	Recommended
	Intel Core i7
	Minimum
RAM	1 GB
	Recommended
	4 GB
	Minimum
Hard Disk	7200 RPM (Video Recording)
	Recommended
	SSD
	Minimum
	DirectX 10 Compatible
	Recommended
	Intel HD Graphics 4600: 2 x Cameras and 4 x Inputs / 1080p or 720p recording + Streaming
Graphics Card	
	NVIDIA 250, 450, 550, 650 (1 GB): 4 x Cameras and 8 x Inputs and Instant Replay / 1080p Recording and Streaming
	NVIDIA 760 (2 GB): 8 x HD Cameras and Instant Replay / 1080p Recording and Streaming
	Minimum
Display Resolution	1280 x 720
	Recommended
	1920 x 1080
	vMix
	vMix Thunder
	vMix GO
	AJA
Supported I/O Cards	KONA 4
	KONA 3G / QUAD
	KONA LHi
	AVerMedia
	Live Gamer HD (C985)

DarkCrystal HD Capture SDK II (C729)
Blackmagic Design
DeckLink 4K Extreme
DeckLink Series
Intensity Extreme
Intensity Pro
Intensity Shuttle Thunderbolt
UltraStudio Mini Recorder
UltraStudio Series
Datapath
Vision Series (VisionAV, VisionHD4)
Epiphan Systems
DVI2USB 3.0
Magewell
XI100DE-4K
XI100DUSB
XI006AUSB
XI204XE
XI400DE
Matrox
VS4
MXO2 Series (Mini, LE, MAX, etc)
Mojito MAX
Osprey
Osprey 845e
Osprey 825e
YUAN High-Tech
SC510 N4 Series
SC510 N2 Series
SC510 N1
SC580 N1
UB530
SC512N1 MC SDI
SC512N1 MC HDV
Thunderbolt Enclosures
Sonnet Echo Express Series: AJA, Matrox, Magewell, and Blackmagic Cards supported
Magma ExpressBox Series: AJA, Matrox, Magewell, and Blackmagic Cards Supported
Other

	HDV/DV Cameras via FireWire (Note: HDV and DV Formats Introduce a Half-Second Delay)
Supported File Types	
Streaming Protocols	RTSP, Flash, RTMP
Video Files	AVI, MP4, H264, MPEG-2, WMV, QuickTime
Audio Files	MP3, WAV
Other Files	PowerPoint

Reference: vMix 4K Live Production, Streaming & Mixing Software or Equivalent

Item 128: **Wireless In-Ear Monitor System with Two Receivers (2.4 GHz) QTY 2**

Tuning Bandwidth	2400 to 2483.5 MHz
Working Range	Up to 90' (Actual Range Depends on Rf Signal Absorption, Reflection, and Interference)
Audio Frequency Response	20 Hz to 20 KHz (-3 dB)
Dynamic Range	107 dB
RF Sensitivity	-88 dBm
Total Harmonic Distortion	0.20%
RF Output Power	10 mW E.I.R.P. max
Operating Temperature Range	0 to 135° F / -18 to 57° C (Battery Characteristics May Limit this Range)
Channels	6
Latency	Less than 5 ms
Audio Resolution	24-bit / 48 Kb/s
Input Impedance	47 Kilohms
Output Impedance	6 to 600 Ohms
Audio Input Connectors	XLR
Audio Output Connectors	3.5 mm
Audio Input Levels	Aux Mode: -10 dBV, Maximum +12.2 dBu
	Line Mode: +4 dBu, Maximum +22 dBu
Antenna Impedance	50 Ohms
Antenna Type	1/4 Wave Sleeve Dipole, Non-Removable
Batteries	Transmitter: 3.7 V Rechargeable Li-Ion, 860 mAh Receiver: 3.7 V Rechargeable Li-Ion, 1200 mAh
Battery Life	5 Hours
Dimensions	Transmitter: 1.2 x 1.1 x 3.9" / 30 X 28 X 100 mm
	Receiver: 1.9 x 1.6 x 2.4" / 47 X 41 X 60 mm
Weight	Transmitter: 3.2 oz / 90 g
	Receiver: 4.2 oz / 118 g

Reference: Xvive Audio U4R2 Wireless In-Ear Monitor System with Two Receivers (2.4 GHz) or Equivalent

Item 129: **Powered Studio Monitor QTY 2**

Monitor Type	Active 2-Way
Enclosure	Bass-Reflex
Power Rating	70 W
Impedance	4 Ohms
Drivers	LF Driver: 1 x 5" / 12.7 cm Cone
	HF Driver: 1 x 1" / 2.54 cm Dome
Amplification	1 x LF Amplifier: Class-D Rated at 45 W
	1 x HF Amplifier: Class-D Rated at 25 W
Frequency Range	74 Hz to 24 kHz (at -3 dB)
	54 Hz to 30 kHz (at -10 dB)
Analog Input Sensitivity/Gain	-10 dBu
Phase Adjustment	None
EQ	1 x LF Shelf: -4 to 0 dB at 500 Hz (2 dB Increments)
	1 x HF Shelf: -2 to +2 dB at 2 kHz (2 dB Increments)
Filters	None
Parametric EQ	None
Crossover Frequency	2 kHz
Audio I/O	1 x XLR Balanced Female Analog Input (10 Kilohms)
	1 x 1/4" TRS Balanced Female Analog Input (10 Kilohms)
Power Consumption	45 W
Enclosure Material	MDF

Reference: Yamaha HS5 Powered Studio Monitor (Single, Black) or Equivalent

Item 130: **12-Input Mixer with Built-In FX and 2-In/2-Out USB Interface QTY 1**

Built-in Effects	SPX algorithm: 24 programs, PARAMETER control:1, FOOT SW:1 (FX RTN CH on/off)
Phantom Power	+48 V switchable, channels 1 - 4
Digital I/O	USB: USB Audio Class 2.0 compliant
	Sampling frequency: max 192 kHz
	Bit depth: 24-bit
Input Channels	4x mono [mic/line]
	2x mono/stereo [mic/line]
	2x stereo [line]
Output Channels	2x stereo out
	1x monitor out
	1x headphone out
	2x aux out
	2x group out
Bus	Stereo: 1
	AUX: 2
	GROUP: 2
Pad	26 dB (mono)
HPF	80 Hz, 12 dB/oct (mono/stereo: MIC only)
Compressor	Threshold: +22 dBu to -8 dBu
	Ratio: 1:1 to 4:1
	Output level: 0 dB to 7 dB
	Attack time: approx. 25 msec
	Release time: approx. 300 msec
Equalizer	EQ high gain: +15 dB/-15 dB, Frequency: 10 kHz shelving
	EQ mid gain: +15 dB/-15 dB, Frequency: 2.5 kHz peaking
	EQ low gain: +15 dB/-15 dB, Frequency: 100 Hz shelving
LED	Peak LED turns on when post EQ signal reaches 3 dB below clipping
Level Metering	2 x 12-segment LED meter [PEAK, +10, +6, +3, 0, -3, -6, -10, -15, -20, -25, -30 dB]
Total Harmonic Distortion	0.03% @ +14 dBu (20 Hz to 20 kHz), GAIN knob: Min, 0.005% @ +24 dBu (1 kHz), GAIN knob: Min
Frequency Response	+0.5 dB/-1.5 dB (20 Hz to 48 kHz), refer to the nominal output level @ 1 kHz, GAIN knob: Min
Equivalent Input Noise	-128 dBu (mono input channel, Rs: 150 Ω, GAIN knob: max)
Residual Output Noise	-102 dBu (STEREO OUT, STEREO master fader: min)

Reference: Yamaha MG12XU 12-Input Mixer with Built-In FX and 2-In/2-Out USB Interface or Equivalent

Item 131: **16-Input Mixer with Built-In FX and 2-In/2-Out USB Interface QTY 1**

Built-in Effects	SPX algorithm: 24 programs, PARAMETER control:1, FOOT SW:1 (FX RTN CH on/off)
Phantom Power	+48 V switchable, channels 1 - 12
Digital I/O	USB: USB Audio Class 2.0 compliant
	Sampling Frequency: max 192 kHz
	Bit Depth: 24-bit
Input Channels	8x mono [mic/line]
	2x mono/stereo [mic/line]
	2x stereo [line]
Output Channels	2x stereo out
	1x monitor out
	1x headphone out
	4x aux out
	4x group out
Bus	Stereo: 1
	AUX: 4
	GROUP: 4
HPF	80 Hz, 12 dB/oct (mono/stereo: MIC only)
Compressor	Threshold: +22 dBu to -8 dBu
	Ratio: 1:1 to 4:1
	Output level: 0 dB to 7 dB
	Attack time: approx. 25 msec
	Release time: approx. 300 msec
Equalizer	EQ high gain: +15 dB/-15 dB, frequency: 10 kHz shelving
	EQ mid gain: +15 dB/-15 dB, frequency: mono 250 Hz - 5 kHz peaking, stereo 2.5 kHz peaking
	EQ low gain: +15 dB/-15 dB, frequency: 100 Hz shelving
LED	Peak LED turns on when post EQ signal reaches 3 dB below clipping
Total Harmonic Distortion	0.03% @ +14 dBu (20 Hz to 20 kHz), GAIN knob: Min, 0.005% @ +24 dBu (1 kHz), GAIN knob: Min
Frequency Response	+0.5 dB/-1.5 dB (20 Hz to 48 kHz), refer to the nominal output level @ 1 kHz, GAIN knob: Min
Equivalent Input Noise	-128 dBu (mono input channel, Rs: 150 Ω, GAIN knob: max)
Residual Output Noise	-102 dBu (STEREO OUT, STEREO master fader: min)
Crosstalk	-78 dB

Reference: Yamaha MG16XU - 16-Input Mixer with Built-In FX and 2-In/2-Out USB Interface or Equivalent

Item 132: **Handheld Gimbal Stabilizer Combo Kit QTY 2**

Number of Axes	3-Axis (Pitch, Roll, Yaw)
Rotation Range	Yaw (Pan): 360°
	Pitch (Tilt): -80 to 135°
	Roll: -35 to 35°
Camera Mounting Screw	1 x 1/4"-20 Male
Connectivity	
Wireless Protocol	Bluetooth 5.0
Battery Type	3 x 18650
Capacity (mAh)	2600 mAh
Battery Runtime	12 Hours
Battery Chemistry	Lithium-Ion
Operating Voltage	9.8 to 12.6 VDC
Operating Current	160 mA

Reference: Zhiyun-Tech CRANE 2S Handheld Gimbal Stabilizer Combo Kit or Equivalent

Item 133: **WEEBILL-2 SE Combo Kit with 2 Mini Tripods & Fabric Case QTY 1**

Number of Axes	3-Axis (Pitch, Roll, Yaw)
Rotation Range	Yaw (Pan): 360°
	Pitch (Tilt): -150 to 190°
	Roll: -260 to 80°
Load Capacity	7.3 lb / 3.3 kg
Ports	1 x USB Type-C
Wireless Frequency	2.4 GHz
Wireless Protocol	Bluetooth 5.0
Battery Type	3 x 18650
Capacity (mAh)	2600 mAh
Battery Runtime	9 Hours
Battery Chemistry	Lithium-Ion
Operating Voltage	9.8 to 12.6 VDC
Operating Current	160 to 6000 mA

Reference: Zhiyun-Tech WEEBILL-2 SE Combo Kit with 2 Mini Tripods & Fabric Case or Equivalent

Item 134: **8-Input / 12-Track Portable Handy Recorder with Injection-Molded Case Kit QTY 1**

Number of Tracks	WAV:
	12 (8 Inputs + Stereo Mix)
Max Sample Rate/Resolution	96 kHz / 24-Bit
Microphone	Interchangeable Cardioid Condenser Stereo Pair, X/Y Configuration
Built-In Speaker	Yes, 400 mW Mono
Display	2.4" / 6.1 cm Color LCD Touchscreen
Memory Card Support	SD (Up to 2 GB)
	SDHC (4 GB to 32 GB)
	SDXC (64 GB to 512 GB)
Internal Storage	None
Audio File Formats	BWF, MP3, WAV
Sample Rates	WAV:
	44.1 / 48 / 96 kHz
Bit Depth	16 / 24-Bit
Bit Rates	128 kb/s
	192 kb/s
	320 kb/s
Signal Processing & FX	Compressor, Limiter, Low-Cut Filter
Timecode Support	No
Analog I/O	4 x XLR 3-Pin Female Balanced Mic Input (Lockable)
	2 x Combo XLR-1/4" TRS Female Balanced Instrument/Line/Mic Input (Lockable)
	1 x 1/8" / 3.5 mm TRS Female Unbalanced Line/Mic Input
	1 x 1/8" / 3.5 mm TRS Female Unbalanced Line Output
	1 x 1/8" / 3.5 mm TRS Female Unbalanced Headphone Output
Phantom Power	+12 / 24 / 48 V (Selectable on Individual Inputs)
Host Connection	1 x Micro-USB
Power Options	Batteries, USB Bus Power, AC/DC Power Adapter
Battery Type	4 x AA (Included)
Approximate Battery Life	20 Hours
AC/DC Power Adapter	5 VDC at 1 A (Not Included)
Mounting Options	1/4"-20 Female (Bottom)
Dimensions	4.6 x 1.9 x 6.4" / 116.4 x 48.6 x 163.3 mm (Recorder)
	3.1 x 1.8 x 2.4" / 78.9 x 45.2 x 60.2 mm (X/Y Mic)
Weight	12.5 oz / 354 g (Recorder)

Injection-Molded Case For Recorders Specs	
Compatibility	Zoom H8
Type of Closure	Clasp
Carrying/Transport Options	Handle
Padded	Yes
Material	Foam, Polypropylene
Exterior Dimensions	12.86 x 9.7 x 3.8" / 32.66 x 24.6 x 9.7 cm

Reference: Zoom H8 8-Input / 12-Track Portable Handy Recorder with Injection-Molded Case Kit or Equivalent

Item 135: **12-Bay SAS NAS Enclosure QTY 1**

CPU	2.1 to 2.7 GHz 8-Core
Processor	Intel Xeon D-1541
Total Installed Memory	32 GB ECC DDR4
Total Memory Slots	4 x DIMM
Maximum Memory Capacity	128 GB
Number of Bays	12 x 2.5"/3.5"
Connections	2 x USB Type-A (USB 3.1 / USB 3.2 Gen 1 (5 Gb/s))
	1 x 9-Pin (Serial)
	4 x RJ45 (Gigabit Ethernet)
	2 x RJ45 (10GbE)
	1 x Mini SAS (SFF-8644)
Compatible Drive Interface	SAS (Unspecified Version), SATA (Unspecified Version)
Media Card Slots	None
Form Factor	Rackmount (2 RU)
RAID Modes	RAID 0, 1, 10, 5, 6, F1, JBOD, Synology Hybrid
Hot-Swap Support	Yes
PCI Expansion	2 x PCIe 3.0 x8
Wake on LAN	Yes
Link Aggregation and Failover Support	Yes
Networking	
Supported Protocols	AFP
	CIFS
	CalDAV
	DLNA
	FTP
	HTTP
	HTTPS
	L2TP
	LDAP
	NFS
	OpenVPN
	PPTP
	SMB
	SNMP
	WebDAV
	iSCSI
iSCSI LUN	512
iSCSI Target	256

Max Concurrent Connections	4000
Max Folders	512
Max Groups	512
Max User Accounts	16000
Max Volume Number	256
Max Cameras Supported	100
Supported File Systems	Internal: BTRFS, EXT4
	External: BTRFS, EXT3, EXT4, FAT, HFS+, NTFS, exFAT
OS Compatibility	Windows 7 or Later
	macOS 10.11 or Later
Supported Browsers	Chrome, Edge, Firefox, Internet Explorer, Safari
Encryption	AES-NI
VPN Client Connections	40
AC Input Power	100 to 240 VAC, 50 / 60 Hz
Power Source	Internal Power Supply
Status Monitoring	LED Indicator
Cooling	4 x 80 mm Fan

Reference: Synology SA3400 12-Bay SAS NAS Enclosure or Equivalent

Item 136: **M2D20 M.2 Adapter Card QTY 1**

Host Interface	PCI Express 3.0 x8
M.2	2 x M Key 2280, 22110 (PCIe (Unspecified))
Form Factor	Full-Height, Low-Profile
Audible Alarm	No

Reference: Synology M2D20 M.2 Adapter Card or Equivalent

Item 137: **Dual Port 10G SFP+ PCIe 3.0 Ethernet Adapter QTY 1**

Networking Ports	2 x 10Gb Ethernet (RJ45)
Transceiver Slots	2 x Enhanced Small Form-factor Pluggable (SFP+)
Host Connection	PCIe 3.0 x8 (Full-Height/Low-Profile Slot)
Supported IEEE Standards	802.3ad, 802.3ae
Transfer Rates	Full-Duplex Mode: 10 Gb/s
Power Source	Bus Powered

Reference: Synology E10G21-F2 Dual Port 10G SFP+ PCIe 3.0 Ethernet Adapter or Equivalent

Item 138: **16TB 7200 rpm SATA III 3.5" Internal NAS HDD CMR QTY 16**

Quantity	1
Storage Capacity	16 TB
Buffer	256 MB
Interface	SATA III (6 Gb/s)
Write Speed	Not Specified by Manufacturer
Read Speed	Maximum: 250 MB/s
Latency	4.2 ms
Drive Type	HDD
Form Factor	3.5"
Noise Level	3.2 dB (Active)
	2.8 dB (Idle)
Spindle Speed (RPM)	7200 RPM
Heads	18
Platters	9
Areal Density	1172 Gb/in²
Disk Sector Format	512e
Annualized Failure Rate (AFR)	0.73%
Endurance (Total Bytes Written)	300 TB
Load/Unload Cycles	600,000
Mean Time Between Failures (MTBF)	1.2 Million Hours
Non-Recoverable Read Errors per Bits Read	1 in 1015
Power Draw	7.6 W (Active)
	5.0 W (Idle)
	1.0 W (Standby)
Supported Voltage	5 VDC, 12 VDC
Current	2.0 A at 12 VDC
Operating Shock	50 G / 2.0 ms
Storage Shock	200 G / 2.0 ms
Operating Vibration	12 G / 10 to 1500 Hz
Storage Vibration	2.27 G / 10 to 500 Hz

Reference: Seagate 16TB IronWolf Pro 7200 rpm SATA III 3.5" Internal NAS HDD (CMR, OEM) or Equivalent

Item 139: **800GB SNV3510 NVMe M.2 22110 SSD QTY 1**

Storage Capacity	800 GB
Interface	PCIe 3.0 x4
Write Speed	Sequential: 1000 MB/s 128 kB Files
	Random: 70,000 IOPS 4 kB Files
Read Speed	Sequential: 3100 MB/s 128 kB Files
	Random: 400,000 IOPS 4 kB Files
Drive Type	SSD
Form Factor	M.2 22110
Endurance (Total Bytes Written)	1022 TB
Mean Time Between Failures (MTBF)	1.8 Million Hours
Non-Recoverable Read Errors per Bits Read	1 in 1017
Power Draw	6.2 W (Active)
	1.7 W (Idle)

Reference: Synology 800GB SNV3510 NVMe M.2 22110 SSD or Equivalent

Item 140: **Sliding Rail Kit QTY 1**

Rail Type	Sliding Rail
Number of Rack Spaces	3 RU
Tapped Thread Type	Oct-32

Reference: Synology Sliding Rail Kit or Equivalent

Item 141: **UF-SM-10G-20 SFP+ Single-Mode Fiber Module (20-Pack) QTY 1**

Supported Media	Single-mode fiber
Connector Type	2 x LC
Wavelength	Tx Wavelength
	1310 nm
	Rx Wavelength
	1310 nm
Data Rate	10 Gbps SFP+
Cable Distance	32,808' / 10 km

Reference: Ubiquiti Networks UF-SM-10G-20 SFP+ Single-Mode Fiber Module (20-Pack) or Equivalent

Item 142: **Duplex LC to Duplex LC Singlemode Fiber Optic Patch Cable 2 meters QTY 15**

Connectors	Duplex LC to Duplex LC
Fiber Type	9/125µm Singlemode
Length	6.56' (2 m)

Reference: Camplex Duplex LC to Duplex LC Singlemode Fiber Optic Patch Cable (Yellow, 6.56') or Equivalent

Item 143: **Next-Generation Firewall QTY 1**

Interfaces	1 x 1000Base-T (Management) RJ45
	1 x Serial RJ45
	1 x USB 3.0 Type-A
	4 x SFP (Mini-GBIC)
	8 x RJ45
Hard Drive	1 x 200 GB HDD
Software	Cisco Threat Defense 6.4
Power Device Details	AC 120/230 V 50/60 Hz Internal Power Supply
Operating Temperature Range	32 to 104°F / 0 to 40°C
Humidity (Non-Condensing)	90%
Rack Mount	1 RU

Reference: Cisco FirePOWER 1140 Next-Generation Firewall or Equivalent

Item 144: **1x Channel CG & Graphics Playout QTY 1**

CG & GraphicsPlayoutFeatures:

1x HD/SD-Channel - CG & Graphics Playout License (TitleBox)

• Unlimited layering

• All running objects are mixed and blended to each other in real time, including animations. The more CPU power, the more objects can be layered simultaneously. This ensures an unlimited amount of object combinations and unprecedented visual variety.

• Total on-air CG control

• Each and every CG object can be edited during the on-air session. Manual or automated changes of text contents, animation/rolling speed, position and properties can be done on-the-fly. Roll/crawl speed can follow a predefined speed curve. On-air changes can either be made directly to the onscreen running objects or on a dedicated preview output and then applied to the master output.

• Slide Sequencer

• Multiple graphics objects can be programmed to run simultaneously or sequentially on a single or multiple layers with just a few mouse clicks. Easy slide and layer management is provided by the intuitive Slide Sequencer.

• TitleBox slaved to AirBox

• Dynamic data sources

• Dynamic text data coming from text, rich text, csv text, XML, RSS feeds, weather channels or ODBC-compliant databases can be linked to any text object and updated on-screen in real-time.

• Graphics files can also be linked to graphics objects on-screen for instant changes.

• OEM applications via TitleBox API TitleBox can run in the background, without its front-end interface, while all objects and slide actions are triggered by a third party OEM software, which sends its script commands to TitleBox locally or through the LAN.

• Advanced Scripting Engine

• New enhanced scripting engine that allows complete control over objects' properties, sequencing and execution.

HardwareSpecs:

Workstation Chassis; Intel® i7 CPU;

8GB DDR4 RAM;

1x Intel® Gigabit Ethernet port;

Storage: 1TBVideo I/O Board with 3G-SDI Outputs for Key & Fill;

Nvidia Graphics Card;

OS: Microsoft Windows 10 Professional x64;

Reference: PlayBox Technology HD/SD TitleBox with Workstation or Equivalent

Item 145: 4k Video Transmitter & Live Streaming Encoder QTY 1

Video Input: 12G-SDI and HDMI 2.0 video inputs

Audio Input: Embedded Audio, up to 8 channels

Supported Data Connections: Simultaneously aggregate up to 12 data connections including internal/external cellular, WiFi, Ethernet, IP Microwave or Satellite (Ka/Ku/BGAN). System includes up to 6 embedded CAT12 3G/4G/LTE modems, embedded 2.4/5GHz WiFi, Ethernet, and 4 USB connections for external modem connections

Modem Support: 6 embedded 5G/LTE, 4 USB

Power Source: A single removable, rechargeable internal battery with an optional external Gold or V-Mount battery

Transmitter Controls: One button power-on, onboard monitoring and management, remote monitoring and management using mobile smart device or Command Center web service

Power Consumption: Max 30W

Storage: Up to 18 hours with 128 SD card

Video Input Resolution:

- SDI Input
- 4K 2160p60/59.94/50/30/29.97/25
- HD 1080p25/29.97/30/50/59.94/60, 1080i 50/59.94/60, 720p 50/59.94/60

HDMI Input

- 4K 2160p60/59.94/50/30/29.97/25
- HD 1080p59.94/60, 1080i 50/59.94/60, 720p 50/59.94/60

Encoding and Compression Standard

H.265/HEVC or H.264 (HD Only)

Variable Bit-Rate Encoding

Reference: 4k Video Transmitter & Live Streaming Encoder TVU One or Equivalent

Item 146: **The Dedicated Live Streaming Video Server QTY 1**

- Decodes multiple types of feeds including TVU®, SDI, and web streams Controls all aspects of live transmission, including bit-rate and latency Provides complete management of TVU transmitters and modem cards Supports SDI, SMPTE 2110 or IP as inputs and outputs
- Supports multiple outputs for SDI including 1080p23.98, 1080p24, 4Kp23.98 and 4Kp24 Allows the creation of a VLAN between the Transceiver and a field device
- Allows any device that supports RTMP to stream directly to the transceiver Supports data pass-through including TC, SCTE, and closed captioning
- Offers multiple monitor and control options including local web UI, HDMI monitor output, cloud UI via TVU Command Center, or smartphone
- Fully edge-device compatible with all TVU Cloud applications Built-in Return Video Encoder for TVU transmitter devices
- Ability to decode streams from Panasonic P2 Streaming and JVC Connected Cams directly. Panasonic cameras support the TVU back end service for simple connectivity
- Optional ability to seamlessly switch from one stream to another with single frame accuracy Optional AI-based closed captioning encoding using TVU Transcriber

Form Factor	1RU Rack-Mount Chassis
Video Resolutions	525i59.94 NTSC, 625i50 PAL, 720p50,
	720p59.94, 1080i50, 1080i60, 1080i59.94,
	1080p23.98, 1080p24, 1080p25,
	1080p29.97, 1080p30, 1080p50,
	1080p59.94, 1080p60, 2160p23.98,
	2160p24, 2160p25, 2160p29.97, 2160p30,
	2160p50, 2160p59.94, 2160p60
Audio Output	Embedded SDI - up to 8-channel
Optional IP Input Formats*	(Up to 1080p only) SMPTE 2110/2022, SRT, RTMP, RTMPS, UDP, HLS, RTSP, YouTube
	VOD, Panasonic P2 Camcorders, JVC Connected Cam

Reference: The Dedicated Live Streaming Video Server TVU Server VS3650 or Equivalent

Item 147: **DSLR Camera QTY 1**

Lens Mount	Nikon F
Sensor Resolution	Actual: 21.33 Megapixel
	Effective: 20.8 Megapixel (5568 x 3712)
Sensor Type	35.9 x 23.9 mm (Full-Frame) CMOS
Mirror Lock-Up	Yes
Capture Type	Stills & Video
Shutter Type	Mechanical Focal Plane Shutter, Electronic Shutter
Shutter Speed	Electronic Front Curtain Shutter
	1/8000 to 900 Seconds
Bulb/Time Mode	Bulb Mode, Time Mode
ISO Sensitivity	Photo
	100 to 102,400 in Manual, Auto Mode (Extended: 50 to 328,000)
	Video
	100 to 102,400 in Manual, Auto Mode (Extended: 100 to 328,000)
Metering Method	3D Color Matrix, Center-Weighted Average, Highlight Weighted, Spot
Exposure Modes	Aperture Priority, Manual, Program, Shutter Priority
Exposure Compensation	-5 to +5 EV (1/3, 1/2, 1 EV Steps)
Metering Range	-3 to 20 EV
White Balance	Presets: Auto, Cloudy, Color Temperature, Direct Sunlight, Flash, Fluorescent, Incandescent, Preset Manual, Shade
Continuous Shooting	Mechanical Shutter
	Up to 14 fps at 20.8 MP for up to 200 Frames (JPEG)
	Electronic Shutter
	Up to 10.5 fps at 20.8 MP
	Up to 60 fps at 2 MP
	Up to 30 fps at 8 MP
Interval Recording	Yes
Self-Timer	2/5/10/20-Second Delay
Image Sizes	3:02
	5568 x 3712
	4176 x 2784
	2784 x 1856
	1:01
	3712 x 3712
	2784 x 2784
	1856 x 1856
	16:09
	5568 x 3128

	4176 x 2344
	2784 x 1560
Aspect Ratio	1:1, 3:2, 4:5, 16:9
Image File Format	JPEG, Raw
Bit Depth	14-Bit
Recording Modes	H.264/MOV
	UHD 4K (3840 x 2160) at 23.98p/25p/29.97p
	Full HD (1920 x 1080) at 23.98p/25p/29.97p/50p/59.94p
	HD (1280 x 720) at 50p/59.94p
Recording Limit	Up to 105 Minutes
Video System	NTSC/PAL
Built-In Microphone Type	Stereo
Audio Recording	AAC Audio
	2-Channel LPCM Audio
External Video Capture	
External Recording Modes	HDMI
	UHD 4K (3840 x 2160)Full HD (1920 x 1080)HD (1280 x 720)
IP Streaming	None
Media/Memory Card Slot	Dual Slot: CFexpress Type B / XQD
Video I/O	1 x Mini-HDMI Output
Audio I/O	1 x 3.5 mm TRS Stereo Headphone Output
	1 x 3.5 mm TRS Stereo Microphone Input
Other I/O	1 x USB Type-C (USB 3.2 / 3.1 Gen 1) Data Output
	1 x Nikon 10-Pin Input
	1 x RJ45 Output
Power I/O	None
Wireless	Bluetooth
	Wi-Fi *Adapter Required
Global Positioning (GPS, GLONASS, etc.)	GPS, GLONASS, QZSS
Size	3.2"
Resolution	2,359,000 Dot
Display Type	Fixed Touchscreen LCD
Secondary Display	Top: Status Display
Type	Optical (Pentaprism)
Eye Point	17 mm
Coverage	100%
Magnification	Approx. 0.72x
Diopter Adjustment	-3 to +1
Focus Type	Auto and Manual Focus
Focus Mode	Continuous-Servo AF, Manual Focus, Single-Servo AF
Autofocus Points	Phase Detection: 105 (105 Cross-Type)

Autofocus Sensitivity	-4.5 to +20 EV
Built-In Flash	No
Flash Modes	First-Curtain Sync, Hi-Speed Sync, Off, Rear Curtain/Slow Sync, Rear Sync, Red-Eye Reduction, Slow Sync, Slow Sync/Red-Eye Reduction
Maximum Sync Speed	1/250 Second
Flash Compensation	-3 to +1 EV (1/3, 1/2, 1 EV Steps)
Dedicated Flash System	iTTL
External Flash Connection	Hot Shoe, PC Terminal
Operating Temperature	32 to 104°F / 0 to 40°C
Operating Humidity	0 to 85%
Battery Type	1 x EN-EL18c Rechargeable Lithium-Ion, 10.8 VDC, 2500 mAh (Approx. 3580 Shots)
Tripod Mounting Thread	1 x 1/4"-20 Female (Bottom)
Accessory Mount	1 x Hot Shoe Mount
Material of Construction	Magnesium Alloy

Reference: Nikon D6 DSLR Camera (Body Only) or Equivalent

Item 148: **24-70mm f/2.8E ED VR Lens QTY 1**

Focal Length	24 to 70mm
Maximum Aperture	f/2.8
Minimum Aperture	f/22
Lens Mount	Nikon F
Lens Format Coverage	Full-Frame
Angle of View	84° to 34° 20'
Minimum Focus Distance	1.25' / 38 cm
Maximum Magnification	0.27x
Optical Design	20 Elements in 16 Groups
Diaphragm Blades	9, Rounded
Focus Type	Autofocus
Image Stabilization	Yes
Filter Size	82 mm (Front)
Dimensions (ø x L)	3.46 x 6.08" / 88 x 154.5 mm
Length at Maximum Extension	6.9" / 175.3 mm

Reference: Nikon AF-S NIKKOR 24-70mm f/2.8E ED VR Lens or Equivalent

Item 149: **70-200mm f/2.8E FL ED VR Lens QTY 1**

Focal Length	70 to 200mm
Maximum Aperture	f/2.8
Minimum Aperture	f/22
Lens Mount	Nikon F
Lens Format Coverage	Full-Frame
Angle of View	34° 20' to 12° 20'
Minimum Focus Distance	3.61' / 1.1 m
Maximum Magnification	0.21x
Optical Design	22 Elements in 18 Groups
Diaphragm Blades	9, Rounded
Focus Type	Autofocus
Image Stabilization	Yes
Tripod Collar	Removable and Rotating
Filter Size	77 mm (Front)

Reference: Nikon AF-S NIKKOR 70-200mm f/2.8E FL ED VR Lens or Equivalent

Item 150: **16-35mm f/4G ED VR Lens QTY 1**

Focal Length	16 to 35mm
Maximum Aperture	f/4
Minimum Aperture	f/22
Lens Mount	Nikon F
Lens Format Coverage	Full-Frame
Angle of View	107° to 63°
Minimum Focus Distance	11.42" / 29 cm
Maximum Magnification	0.25x
Optical Design	17 Elements in 12 Groups
Diaphragm Blades	9, Rounded
Focus Type	Autofocus
Image Stabilization	Yes
Filter Size	77 mm (Front)
Dimensions (ø x L)	3.25 x 4.92" / 82.5 x 125 mm
Length at Maximum Extension	4.94" / 125.5 mm
Weight	1.5 lb / 680 g

Reference: Nikon AF-S NIKKOR 16-35mm f/4G ED VR Lens or Equivalent

Item 151: **77mm HD3 UV Filter QTY 3**

Filter Type	UV
Filter Factor	1x (0-Stop)
Circular Size	77 mm Filter Thread
Front Accessory Thread / Bayonet	77 mm
Coatings	Multi-Coating
Filter Material	Glass
Ring Material	Aluminum

Reference: Hoya 77mm HD3 UV Filter or Equivalent

Item 152: **SB-5000 AF Speedlight QTY 1**

Guide Number	113.19' / 34.5 m at ISO 100 (35 mm Position)
	180.45' / 55 m at ISO 100 (200 mm Position)
Coverage	Full-Frame
	24 to 200 mm
	14 mm (with Wide-Angle Adapter)
Angle of Coverage	12 to 84°
	84 to 114° (with Wide-Angle Adapter)
Auto Zoom Head	Yes
Bounce Head	-7 to +90°
Swivel Head	360°
Flash Duration	1/980 to 1/30820 Second
Recycle Time	Approx. 1.8 to 2.6 Seconds
Secondary Illumination	None
Exposure Control	Nikon i-TTL, Manual
Flash Modes	Hi-Speed Sync, Second-Curtain Sync, Slow Sync
Power Range	1/1 to 1/256
Flash Compensation	-3 to +3 EV (1/3 EV Steps)
Wireless Operation	Radio (TTL/Manual)
	Up to 98.43' / 30 m (Commander, Slave)
	Optical Pulse (TTL/Manual)
	Up to 32.81' / 10 m (Commander, Slave)
Wireless Channels	4
Wireless Groups	6
Remote Timing Modes	Instant Sync
	Skip Preflash
Internal Power	4 x AA (Alkaline, NiMH)
External Power Pack Compatible	Yes
Mount	Shoe
Off-Camera Terminal	PC

Reference: Nikon SB-5000 AF Speedlight or Equivalent

Item 153: **128GB CFexpress Type B TOUGH Memory Card QTY 2**

Card Type	CFexpress Type B
Storage Capacity	128 GB
Bus Type	PCI-Express 3.0
Read Speed	Maximum: 1700 MB/s
Write Speed	Maximum: 1480 MB/s
Durability	Shockproof, Temperature Extremes, UV Light Resistant, X-Ray Proof
Operating Temperature	-13 to 158°F / -25 to 70°C
Storage Temperature	-40 to 185°F / -40 to 85°C
Error Correction	Yes
Wireless Capability	None

Reference: Sony 128GB CFexpress Type B TOUGH Memory Card or Equivalent

Item 154: **MRW-G2 CFexpress Type A/SD Memory Card Reader QTY 1**

Memory Card Slots	1 x CFexpress Type A / SD
Host Connection	USB Type-C Male [USB 3.1 / 3.2 Gen 2 (10 Gb/s)]
Power Source	Thunderbolt/USB Bus Power

Reference: Sony MRW-G2 CFexpress Type A/SD Memory Card Reader or Equivalent

Item 155: **Camera and Laptop Backpack QTY 1**

Carry/Transport Options	Backpack Straps, Handle, Waist Belt
Color	Black
Type of Closure	Zipper
Laptop/Tablet Compartment	Single Compartment: Fits 15" Laptop
Interior Type	Adjustable Dividers (Hook & Loop)
Monopod/Tripod Holder	Yes
Features	Accessory Loops

Reference: Lowepro ProTactic BP 450 AW II Camera and Laptop Backpack (Black) or Equivalent

Item 156: **ELB 500 TTL QTY 1**

Outlets	2 Asymmetrical
Connections	1 x 1/8" / 3.5 mm Sync
Metering	TTL
Maximum Watt/Seconds	500 W/s
Flash Variability	f/ 7 (1/10-Step Increments)
Flash Duration	1/3400 to 1/20,000 Sec
Number of Flashes	400
Recycle Time	0.05 to 3.5 Sec
Built-In Receiver	Yes
Chemistry	Lithium-Ion
Elinchrom Li-Ion Battery For ELB 500 TTL Specs	
Charging Time	1.6 Hours
Chemistry	Lithium-Ion
Flashes Per Charge	400 Flashes (Full Power)
Elinchrom Battery Charger For ELB 400 And ELB 500 TTL Specs	
AC Input Power	100 to 240 VAC, 50 / 60 Hz at 1.5 A
Number of Battery Bays	1
Flash Duration	1/3400 Sec
Color Temperature	5500K ± 200K
Exposure Control	TTL (via Additional Equipment)
Flash Modes	Hi-Speed Sync
Reflector	Changeable
Accessory Fitting Type	Elinchrom Quadra, Umbrella Shaft
Replaceable Flashtube	Yes
Type	LED
Wattage	14 W
Control Modes	Free Set, Full On, Off, Proportional
Color Temperature	5200K
Built-In Wireless Receiver	No
Interface	Mini (1/8")
Mounting	5/8" Receiver
Fan Cooled	No
Cable Length	8' / 2.4 m
Elinchrom Snappy Carry Bag With Shoulder Strap For ELB 500 TTL Specs	
Material of Construction	Ballistic nylon
Carrying Options	Shoulder strap
Elinchrom 7" (17.8 Cm) Grid Reflector For Quadra Heads Specs	

Elinchrom ProTec Location Bag Specs	
Closure Type	Zipper
Carry and Transport Options	Handle
	Shoulder Strap
Material of Construction	Nylon
Elinchrom 5.3" (13.5 Cm) Standard Reflector For Quadra Flash Head Specs	

Reference: Elinchrom ELB 500 TTL Dual To Go Kit or Equivalent

Item 157: **EL-Skyport Transmitter Pro QTY 1**

Channels	20 (Normal)
	20 (Speed)
Groups	4
Wireless Range	164 to 656' / 50 to 200 m
Radio Frequency	2.4 GHz
Sync Speed	1/8000 Sec (High-Speed)
Ports	1 x 2.5 mm (Camera Shutter)
	1 x Mini-USB
Battery Type	2 x AA
Dimensions	Transmitter: 3.3 x 2.7 x 2.3" / 84 x 68 x 58 mm

Reference: Elinchrom EL-Skyport Transmitter Pro for Nikon or Equivalent

Item 158: **Flash Stand Kit with Case (7.7') QTY 1**

Stand/Column Top Mount	5/8" Stud
Accepts Second Riser	No
Air Cushioned	No
Detachable Base	No
Leveling Leg	No
Reverse Legs	No
Stand Type	2 x General Purpose Stand
Maximum Working Height	92.5" / 235 cm
Minimum Working Height	34.6" / 88 cm
Load Capacity	11 lb / 5 kg
Footprint Diameter	3.14" / 8 cm
Finish	Black
Material	Aluminum
Weight	3.2 lb / 1.4 kg

Reference: Elinchrom Stand Kit with Case (7.7') or Equivalent

Item 159: **41" Shallow Umbrella (Translucent) QTY 2**

Size	41.0" / 104.1 cm
Interior Color	White (Translucent)
Shaft Diameter	8 mm

Reference: Elinchrom 41" Shallow Umbrella (Translucent) or Equivalent

Item 160: **Rectabox (60 x 80cm / 24 x 31.5") QTY 2**

Item Type	24 x 31.5" Softbox (Rectangular Shape)
Interior Color	Silver
Light Compatibility	Requires Speed Ring (Not Included)
Quick Open Type	No
Accepts Grids	Yes (Not Included)
Maximum Wattage	300 W
Removable Front Face	Yes
Interior Baffle	Yes, Removable
Dimensions	31.5 x 24 x 12" / 80 x 60 x 30 cm
Weight	2.0 lb / 0.94 kg

Reference: Elinchrom Rotalux Rectabox (60 x 80cm / 24 x 31.5") or Equivalent

Item 161: **33" Shallow Umbrella (White/Translucent) QTY 1**

Size	33.0" / 83.8 cm
Interior Color	White (Translucent)
Shaft Diameter	8 mm

Reference: Elinchrom 33" Shallow Umbrella (White/Translucent) or Equivalent

Item 162: **C-Stand with Quick Release Sliding Leg with Grip Arm QTY 1**

Stand Type	1 x C-Stand with Grip Arm
Maximum Working Height	10.3' / 313.9 cm, without Boom Arm
Minimum Working Height	4.3' / 131.1 cm, without Boom Arm
Load Capacity	22 lb / 10 kg, without Boom Arm
Closed Length	4.3' / 131.1 cm
Arm Mount (to Light/Accessory)	2.5" Grip Head
Arm Mount (to Stand)	2.5" Grip Head
Stand/Column Top Mount	5/8" Stud
Accepts Second Riser	No
Wheels	Not Compatible
Leveling Leg	Yes
Reverse Legs	No
Arm Length	40" / 101.6 cm
Number of Sections	3
Footprint Diameter	37.4" / 95 cm
Leg Shape	Round
Finish	Black
Material	Steel

Reference: Impact C-Stand with Quick Release Sliding Leg with Grip Arm (Black) or Equivalent

Item 163: **Display Studio Colorimeter QTY 1**

USB Support	USB Type-A Plug
System Requirements	Windows 7 (32- or 64-Bit) and Later; Intel Core 2 Duo or AMD Athlon XP or Better Processor
	Mac OS X 10.13.x and Later; Intel Core Duo Processor
	512 MB RAM (2 GB Recommended)
	500 MB of Available Disk Space
	Powered USB Port
	1024 x 768 Monitor Resolution or Larger
	Dual Display Requires Either Two Video Cards or a Dual Head Video Card that Supports Dual Video LUTs being Loaded
	Internet Connection for Software Download

Reference: X-Rite i1Display Studio Colorimeter or Equivalent

Item 164: **Aluminum Tripod with 804 3-Way Pan/Tilt Head QTY 1**

Load Capacity	22 lb / 10 kg
Maximum Working Height	63.2" / 160.5 cm
Max Height without Center Column	53.9" / 136.9 cm
Minimum Working Height	12" / 30.5 cm
Closed Length	23.4" / 59.4 cm
Head Mount Type	3/8"-16 Male
Weight	3.9 lb / 1.8 kg
Materials	Aluminum Alloy
Leg Lock Type	Flip Lock
Leg Positions	4 Positions
Independent Leg Spread	Yes
Leg Sections	3
Center Column Sections	1
Center Column Extension Type	Rapid
Lateral / 90-Degree Center Column	No
Manfrotto MH804 3-Way, Pan-And-Tilt Head With 200LT-PL Quick Release Plate Specs	
Head Type	Pan & Tilt Head
Base Mount	3/8"-16 Female
Camera Mounting Screw	1/4"-20 Male
Quick Release Plate Type	RC2
Load Capacity	22 lb / 10 kg
Number of Bubble Levels	1
Material	Technopolymer
Lateral Tilt	-90° to +30°
Vertical Tilt	+90° to -30°
Panning Range	360°

Reference: Manfrotto MK290XTA3-3WUS 290 Xtra Aluminum Tripod with 804 3-Way Pan/Tilt Head or Equivalent

Item 165: **Electronic Dry Cabinet (125L) QTY 1**

Volume Capacity	4.4 ft³ / 125 L
Humidity Control	35 to 60% (+/-7%)
Security	Key Lock
Control Interface	LCD Display
AC Input Power	110 to 240 VAC, 50 / 60 Hz
Power Consumption	<15 W
Construction	Glass, Steel
Interior Dimensions (W x H x D)	16.1 x 32.2 x 15.3" / 40.9 x 81.8 x 38.9 cm
Exterior Dimensions (W x H x D)	16.1 x 35.4 x 15.4" / 40.9 x 89.9 x 39.1 cm
Weight	42.3 lb / 19.2 kg

Reference: Ruggard EDC-125L Electronic Dry Cabinet (125L) or Equivalent

Item 166: **7.0" Full HD HDMI On-Camera Monitor**

Panel Type	IPS-Type LCD
Display Size	7.0" / 17.8 cm
Resolution	1920 x 1200
Aspect Ratio	16:10
Viewing Angle	Horizontal: 160° (80/80)
	Vertical: 160° (80/80)
Maximum Brightness	2200 cd/m$_2$
Contrast Ratio	1200:01:00
Pixels Per Inch (ppi)	323 ppi
Video	1 x HDMI Type A (HDMI 1.4) Input
	1 x HDMI Type A (HDMI 1.4) Output
Audio	1 x 1/8" / 3.5 mm Headphone Output
Built-In Speaker	1
Video Format	HDMI
	DCI 4K: 24
	UHD 4K: 30/29.97/25/24/23.98
	1080p: 60/59.94/50/30/29.97/25/24/23.98
	1080PsF: 24/23.98
	1080i: 60/59.94/50
	720p: 60/59.94/50/30/29.97/25/24/23.98
	576p: 25
	480p: 29.97
	576i: 50
	480i: 59.94
DC Input Power	7 to 24 VDC at 2 A
Battery Type	1 x L-Series (Interchangeable Mount)
Power Consumption	18 W
Mounting-Hole Pattern	75 x 75 mm
Mounting	1 x 1/4"-20 Female

Reference: FeelWorld 7" 4K Ultra-Bright Monitor with Loop-Through HDMI or Equivalent