Equipment – Film and Video

Equipment – Film

8mm, 9.5mm, 16mm, and 35mm film - Digitization of analog film MUST be handled by a film specialist and on modified playback equipment.

Blackmagic Design Cintel Film Scanner

Sniper-HD Pro Telecine Scanning System

Filmfabriek Pictor System

Equipment – Video – VHS/VCR

Videocassette Recorder (VCR) - is an electromechanical device that records analog audio and analog video from broadcast television or other source on a removable, magnetic tape videocassette, and can play back the recording. Use of a VCR to record a television program to play back at a more convenient time is commonly referred to as time shifting. VCRs can also play back prerecorded tapes. In the 1980s and 1990s, prerecorded videotapes were widely available for purchase and rental, and blank tapes were sold to make recordings.

(https://www.wipo.int/wipo_magazine/en/2006/06/article_0003.html)

Equipment – Video – VHS/VCR

Many different playback machines are available on the market

Equipment – Video - Betamax

Betamax Player- The format was introduced May 10, 1975, by Sony in a console with a built in Sony Trinitron television. Sony's second model was a stand-alone VCR. Soon after Toshiba, Sanyo, and a few other manufacturers soon produced their own line of Beta VCRS. Sanyo known as the Betacord VCRS. Zenith, Realistic, Sears also had their clones of the Sanyo and Sony Betamax VCR. Sony was the creator of Betamax VCR (VTR).

(http://www.betamaxcollectors.com/sonybetamaxgallery.html)

Equipment – Video - Betamax

Betamax players are varied - Many different playback machines are available on the market

Equipment – Video - Betacam

Betacam Player- The original **Betacam** format was launched on August 7, 1982. The original Betacam format records on cassettes loaded with ferric oxide–formulated tape, which are theoretically the same as used by its consumer market-oriented predecessor Betamax, introduced seven years earlier by Sony in 1975. In 1986, Betacam SP (commonly referred to as Beta SP) was developed, which increased horizontal resolution to 340 lines.

Equipment – Video - Betacam

Betacam players are somewhat limited. Sony made the most popular playback machines

Equipment – Video – Video8/Hi8

Video8/Hi8 - 8mm video format refers informally to three related videocassette formats for the NTSC and PAL/SECAM television systems. These are the original Video8 (analog recording) format and its improved successor Hi8 (analog video and analog audio but with provision for digital audio), as well as a more recent digital recording format known as Digital8**. Video8** was launched in 1984, into a market dominated by the VHS-C and Betamax formats.

(https://www.upi.com/Archives/1984/01/04/Eastman-Kodak-Co-Wednesday-entered-the-home-video-war/1074442040400/)

Equipment – Video - Video8/Hi8

Video8 and Hi8 players are somewhat limited. Kodak made the most popular playback machines

Equipment – Video – D2

D-2 is a professional digital videocassette format created by Ampex and introduced in 1988

Equipment – Video – D2

D2 players are rare, Sony and Ampex were the most popular manufacturers

Equipment – Video – DVCAM

DVCAM is a relatively new format, so decks are in use, are still being produced and marketed, and are readily available. DVCAM is the global standard for professional Standard Definition acquisition introduced by Sony as a higher performance, more reliable version of consumer DV while retaining full compatibility

(https://pro.sony/en_CZ/products/handheld-camcorders/dsr-pd175p#:~:text=DV)

Equipment – Video – DVCAM

DVCAM was mostly produced by SONY.

Equipment – Video – MiniDV

DV is a format for storing digital videos. It was launched in 1995 with joint efforts of leading producers of video camera recorders. It is the foundation of the **MiniDV** format. Most DV players, editors and encoders only support the basic DV format, but not its professional versions. The exception to this being that most (not all) consumer Sony MiniDV equipment will play mini-DVCAM tapes. DV Audio/Video data can be stored as raw DV data stream file (data is written to a file as the data is received over **FireWire.**

(https://pro.sony/en_CZ/products/handheld-camcorders/dsr-pd175p#:~:text=DV)

Equipment – Video – MiniDV

MiniDV players were produced by SONY and JVC

Equipment – Portable Video Digital Converter

Equipment: ClearClick Video2 Digital Converter (2nd generation)

Technical Specifications: (1) Recording Resolution: SD 720x480 Pixels; (2) Smartphone/Tablet-Friendly MP4 Recording Format; (3) USB 3.0 flash drive (128 GB or less) or SD card (128 GB or less, Class 10 or higher); (4) 3.5mm to 3-AV cable; (5) Auto-stop/start.

Input/Output: (1) s-video; (2) HDMI out; (3) USB-A; (4) C-USB; (5) AV IN; (L-R In/Out)

Equipment – Portable Video Digital Converter

There are multiple converters on the market but the ClearClick brand offers high quality and ease of use options

Equipment - Audio

Equipment Audio – Reel-to-reel deck - 1

Equipment: AKAI 1730DSS Reel to Reel Tape Recorder Surround Stereo Deck

Technical Specifications: (1) ¼ Rec/PB Track capability; (2) 3 ¾”, 7 ½” speeds; (3) 3-head; (4) permalloy head unit; (5) quad head configuration; (6) (3dB): 7½ Ips: 30Hz To 22 KHz; (7) Distortion: less than 1.5% at 7½ ips (1,000Hz at “0” VU recording); (8) Bias frequency: 100kHz

Input/Output: (1) Inputs: 4 x Microphone: 0.4 mV impedance 30 Kohms 4 x Line: 40 mV impedance 100 Kohms 2 x DIN: 5mv; (2) Outputs: 4 x Line: 1.228V max. load impedance more than 20 Kohms 2 x Din: 0.4V 2 x Headphones (front and rear) : 100 mV at 8 ohms

Equipment Audio – Reel-to-reel deck - 1

Reel-to-reel players are becoming a rare piece of equipment. Parts are hard to find. Large brands such as AKAI, Otari, and Studer are preferred

Equipment Audio – Wire Recorder - Reels

Wire recordings are heavy, stainless steel, spools of wire, mounted to the players. They need a great deal of specialty skills, care, and training before handling. They tangle and it is difficult or impossible to repair.

Equipment Audio – Wire Recorder

Webster-Chicago Electronic Memory Recorder

Webster-Chicago Model 7 wire recorder from 1948

Colonial Radio Corporation Silverstone Combo Unit

Equipment Audio – Wax Cylinder Recorder

Wax cylinders are the earliest commercial medium for recording and reproducing sound. They should ONLY be handled by trained specialists

Equipment Audio – Audiocassette Deck 1

Equipment: Pyle PT-649D Dual Cassette Deck

Technical Specifications: (1) 4-track system; (2) 2-channel stereo; (3) S/N Ratio: 58dB; (4) Tape Speed: 4.8cm/sec; Crosstalk: 40dB (1kHz); (5) Harmonic Distortion: <1%; (6) Freq. Response (CrO240): -15kHz +/-3dB; (7) Freq. Response (Normal): 40-14kHz +/-3dB; (8) Power: 110/220V; (9) Digital Link Interface; (10) High-Speed Dubbing Selectable

Input/Output: (1) RCA (L/R) Input Connectors; (2) RCA (L/R) Output Conector; (3) Amplifier Connection: 2-Pin Wire Jack; (4) RF: input and output (tuner pass through only)

Equipment Audio – Audiocassette Deck 1

There are many audiocassette decks in the market. Sony is the most popular. Pyle is a good equivalent.

Equipment Audio – Turntable and Stylus

Equipment: Audio-Technica Direct-Drive Turntable (Analog & USB) AT-LP120XUSB
Stylus: audio-Technica CN5625AL Phono Cartridge; 78RPM ONLY Stylus for AT3600 AT3600L Crosley; ATN3600 Hyper Elliptical Stylus

Technical Specifications: (1) Direct-drive, DC servo motor; (2) Selectable 33/45/78 RPM speeds; (3) AT-HS6 universal ½"-mount head shell and AT-VM95E Dual Magnet™ phono cartridge with 0.3 x 0.7 mil elliptical stylus; (4) AT-VM95E cartridge is compatible with any VM95 Series replacement stylus, offering a wide choice of options for every budget and application; (5) Speeds 33-1/3 RPM, 45 RPM, 78 RPM; (6) Pre-amplification selector.

Input/Output: (1) Phono line IN/Out; (2) Sound card slot; (3) Amplifier Connection: 2-Pin Wire Jack; (4) USB input/output.

Equipment Audio – Turntable and Stylus

As with the cassette decks, turntables are very common. Be sure to have the selection of stylus 'needles' that fit the needs of the collection

The stylus or needle is a crucial part of any cartridge because it is the part that rides on the record groove:

- ***Spherical*** - spherical stylus is generally preferred especially if the surface is damaged
- ***Elliptical*** - elliptical stylus may well avoid frequency dependent tracking error

Cylinders should be replayed with a stylus whose tip has a radius a little smaller than the bottom radius of the groove. A truncated stylus will damage the groove because tracking will take place at the edge rather than the tip, resulting in increased pressure to that part of the groove.

Equipment Audio – PCM Audio Recorder/Playback

Equipment: TASCAM DR-40 Linear PCM Recorder

Technical Specifications: (1) SD card (64MB to 2GB), SDHC card (4GB to 32GB); (2) WAV/BMF: 44.1k/48k/96k Hz, 16/24-bit ; (3) Bit rate: 32k/64k/96k/128k/192k/256k/320k bps; (4) 4-channel (2 stereo);

Input/Output: (1) Conector: XLR/TRS combo jack (1: GND, 2: HOT, 3: COLD); (2) Inputs: 2.2kΩ (MIC) / 10kΩ (LINE), max: –3dBV (MIC) / +20dBu (LINE); (3) Outputs: 12Ω, max: +2dBV (10kΩ load); (4) USB/SD/HDS

Equipment Audio – PCM Audio Recorder/Playback

Used for direct recording and secondary recording for oral history or audio – TASCAM is the industry preference

Equipment Audio – Digital Audio Mixer

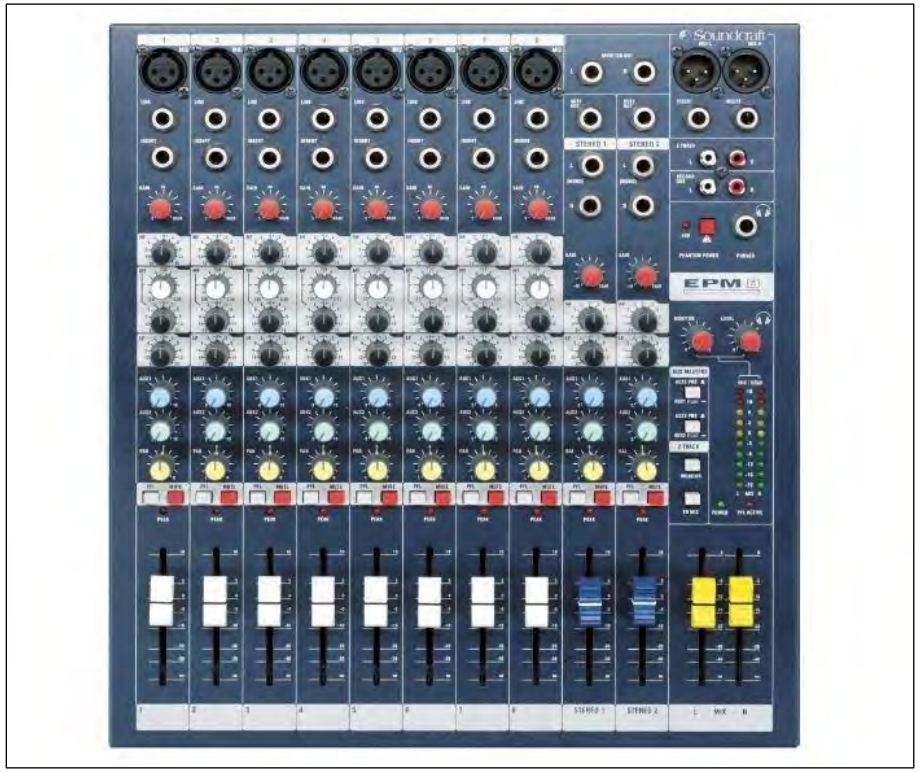
Equipment: SoundCraft EPM 8

Technical Specifications: (1) 8 Mono + 2 Stereo Audio Console; (2) 100 mm Faders: L/R; (3) +48 V Phantom; (4) Frequency response 20 Hz to 20 kHz +/-1.5 dB

Input/Output: (1) 2 USB 2 ports; (2) 2x Stereo: L/R 1/4" TRS Phone; (3) Monitor: L/R Stereo Paired 1/4" TRS Phone; (4) 2 HDMI ports; (5) Component port; (6) TV tuner; (7) Digital Audio/Video Output; (8) **Mono Inputs** +/- 15 dB - Lo: 80 Hz - Mid: 150 Hz - 3.5 kHz (swept) - Hi: 12 kHz - Q: 1.5 ; (9) Stereo Inputs +/-15 dB - Lo: 80 Hz - Mid: 720 Hz - Hi: 12 kHz

Connected Equipment:

Equipment Audio – Digital Audio Mixer



Equipment – Digital Audio Interface 1

Equipment: Echo AudioFire 12

Technical Specifications: (1) Sample rates: 44.1, 48, 88, 96, 176 and 192 kHz from internal clock; external clock range 32kHz to 192kHz; (2) Dynamic range: input 113dBA, output 114dBA; (3) Frequency response: 20Hz to 20kHz ±0.1dB; (4) THD + Noise: <0.002 percent.

Input/Output: (1) Analogue inputs: 12 quarter-inch TRS balanced/unbalanced jack sockets with individually switchable +4dBu/-10dBV sensitivity and 10kΩ impedance; (2) Analogue outputs: 12 balanced/unbalanced TRS quarter-inch jacks with individually switchable +4dBu/-10dBV output level.

Equipment Audio – Digital Audio Interface 1

Equipment Audio – Digital Audio Interface 2

Equipment: MOTU Audio Express 6x6 FireWire Audio Interface

Technical Specifications: (1) FireWire/USB 2.0; (2) A/D Resolution **:**24-bit/96kHz; (3) Frequency response: 20Hz to 20kHz ±0.1dB; (4) THD + Noise: <0.002 percent; (4) 6-input, 6-output audio interface for Mac and Windows; (5) 6 x 8 physical input/output channels - all channels are available simultaneously and operate independently; (6) 8-bus digital mixer - routes and mixes all six inputs to any output pair; (7) Two mic/guitar combo jacks - provide hi-Z 1/4" guitar input or XLR mic input with phantom power, 20dB pad, Precision Digital Trim, and plenty of gain: (8) Standard sample rates up to 96kHz.

Input/Output: (1) Analog Inputs: 2 x XLR, 5 x 1/4"; (2) Analog Outputs: 5 x 1/4“; (3) Digital Inputs: 1 x S/PDIF; (4) Digital Outputs: 1 x S/PDIF; (5) Simultaneous I/O: 6 x 6; (6) Stereo 24-bit 96kHz S/PDIF digital in/out

Equipment Audio – Digital Audio Interface 2

There are many choice for digital audio interfaces. FireWire devices support a higher bandwidth than USB 2.0, and therefore can send more data faster.

Equipment Audio – Digital Audio Interface 3

Equipment: Behringer U-Control UCA202

Technical Specifications: (1) FireWire/USB 2.0; (2) 16-bit/48kHz converters

Input/Output: (1) USB Audio Interface; (2) Analog Outputs: 2 x RCA (3) Analog Inputs: 2 x RCA ; (4) Digital Outputs: 1 x Optical; (5) Simultaneous I/O: 6 x 6; (6) Stereo 24-bit 96kHz S/PDIF digital in/out

Equipment Audio – Digital Audio Interface 3

Portable digital audio interface for laptops, multiple transfers

Equipment and Wiring [in-house studio]

AKAI Reel-to-Reel

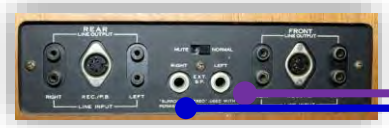
Rear Line

Right Left

Front line

Audiocassette Deck

XLR Cords



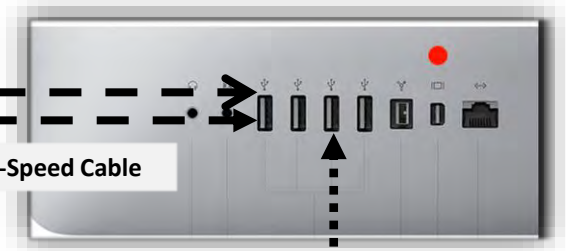
Line 1 line 2

2 track
left right

iMac Desktop

XLR Cords

Motu Audio Interface



USB2 HI-Speed Cable

USB2 HI-Speed Cable

VHS/DVD Player

Video Interface

Stereo audio cables

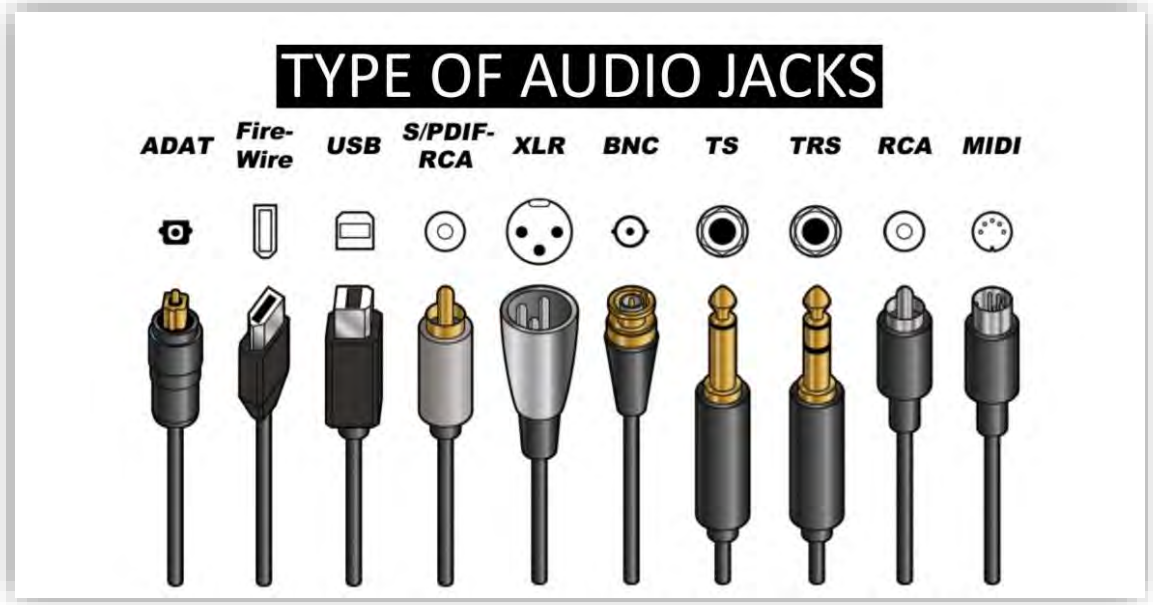
Audio/Video cables

XLR Cords

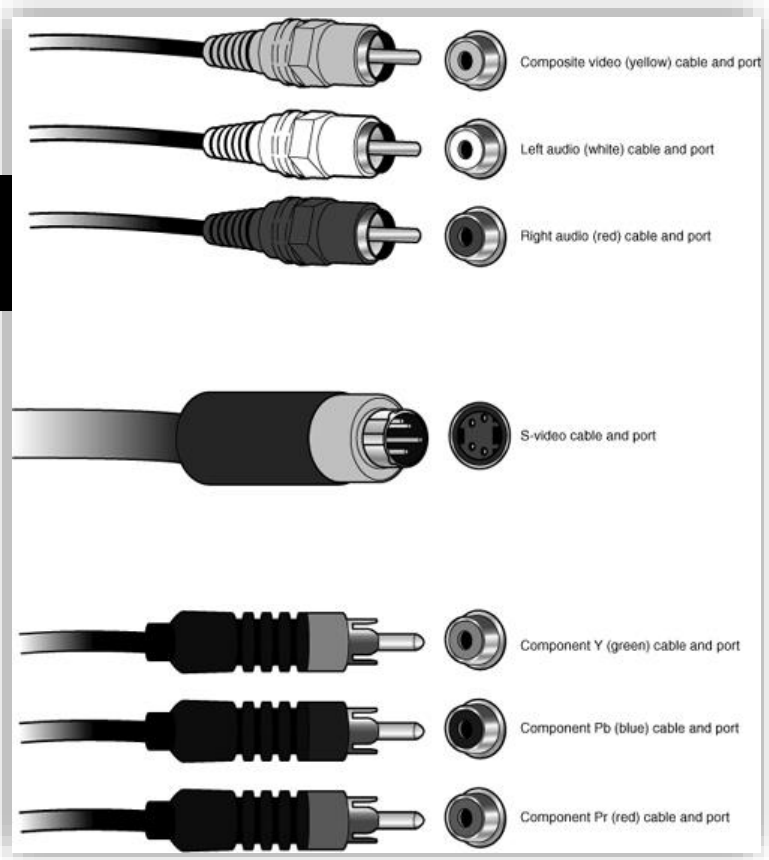
XLR ¼" TRS Cords

USB2 HI-Speed Cable

Wiring – Equipment – Cables



TYPE OF VIDEO CONNECTORS



TYPE OF ADAPTERS

Wiring – Equipment – Computer 1

Equipment: iMac (27-inch, Late 2013) – primary computer for audiovisual (A/V) digitization station

Operating System: macOS Mojave Version 10.14.6

Processor: 3.5 GHz Intel Core i5

Memory Storage: 32 GB 1600 MHz DDR3

Graphics: NVIDIA GeForce GT 755M 1 GB

Input/Output: (1) headphone port; (2) SDXC card slot; (3) Four USB 3 ports (compatible with USB 2); (4) Two Thunderbolt 2 ports; (5) Gigabit Ethernet

Wiring – Equipment – VCR Deck 1

Equipment: Samsung DVD-V8500 DVD/VCR

Input/Output: (1) 2 Composite AV (RCA) Ins ; (2) Composite AV (RCA) Out: 1; (3) S-Video Out; (4) RF: input and output (tuner pass through only)

Wiring – Equipment – Audiocassette Deck 1

Equipment: Pyle PT-649D Dual Cassette Deck

Technical Specifications: (1) 4-track system; (2) 2-channel stereo; (3) S/N Ratio: 58dB; (4) Tape Speed: 4.8cm/sec; Crosstalk: 40dB (1kHz); (5) Harmonic Distortion: <1%; (6) Freq. Response (CrO240): -15kHz +/-3dB; (7) Freq. Response (Normal): 40-14kHz +/-3dB; (8) Power: 110/220V; (9) Digital Link Interface; (10) High-Speed Dubbing Selectable

Input/Output: (1) RCA (L/R) Input Connectors; (2) RCA (L/R) Output Connectors; (3) Amplifier Connection: 2-Pin Wire Jack; (4) RF: input and output (tuner pass through only)

Wiring – Equipment – Turntable 1

Equipment: audio-Technica Direct-Drive Turntable (Analog & USB) AT-LP120XUSB

Technical Specifications: (1) Direct-drive, DC servo motor; (2) Selectable 33/45/78 RPM speeds; (3) AT-HS6 universal ½"-mount head shell and AT-VM95E Dual Magnet™ phono cartridge with 0.3 x 0.7 mil elliptical stylus; (4) AT-VM95E cartridge is compatible with any VM95 Series replacement stylus, offering a wide choice of options for every budget and application; (5) Speeds 33-1/3 RPM, 45 RPM, 78 RPM; (6) Pre-amplification selector.

Input/Output: (1) Phono line IN/Out; (2) Sound card slot; (3) Amplifier Connection: 2-Pin Wire Jack; (4) USB input/output.

Wiring – Equipment – VHSC Player

Equipment: Panasonic PV-L580D Compact VHS/VHS-C

Technical Specifications: (1) Optical sensor CCD; (2) Digital Zoom to 300x; (3) TTL contrast detection; (4) Audio format NTSC; (5) Exposure and white balance controls: 0.8 lux/strobe, still, wide, 1/100000sec shutter speed; (6) Image storage Fine JPEG 640 x 480: 60 - with 8MB card; (7) CompactFlash Card

Input/Output: (1) s-video; (2) composite video; (3) component video

Wiring – Equipment – Digital8 Player

Equipment: Sony DCR-TRV280 Digital8 Camcorder

Technical Specifications: (1) 20x Optical/990x Digital Zoom; (2) Multilanguage Menu; (3) 1/6" 460K Gross Pixel CCD Effective Video: 290K Pixels; (4) Filter: 37mm; (5) 4 lux; (6) Image storage Fine JPEG 640 x 480: 60 - with 8MB card; (7) PCM Digital Stereo, 12-bit, 16-bit

Input/Output: (1) Input: IEEE-1394 (Firewire) x1 ; (2) Outputs: Audio/Video x1 - mini jack and USB ; (3) component video

Wiring – Equipment – MiniDV Player

Equipment: Canon DC210 MiniDV Player

Technical Specifications: (1) Dolby Digital 2ch (AC-3 2 ch); (2) Pixels: Movies: approx. 340,000 (4:3), Still Images: approx. 450,000; (3) DVD-R/-RW/-R DL

Input/Output: (1) Input: IEEE-1394 (Firewire) x1 ; (2) Outputs: Audio/Video x1 - mini jack and USB ; (3) component video

Wiring – Equipment – PCM Audio Recorder/Playback

Equipment: TASCAM DR-40 Linear PCM Recorder

Technical Specifications: (1) SD card (64MB to 2GB), SDHC card (4GB to 32GB); (2) WAV/BMF: 44.1k/48k/96k Hz, 16/24-bit ; (3) Bit rate: 32k/64k/96k/128k/192k/256k/320k bps; (4) 4-channel (2 stereo);

Input/Output: (1) Conector: XLR/TRS combo jack (1: GND, 2: HOT, 3: COLD); (2) Inputs: 2.2kΩ (MIC) / 10kΩ (LINE), max: –3dBV (MIC) / +20dBu (LINE); (3) Outputs: 12Ω, max: +2dBV (10kΩ load); (4) USB/SD/HDS

Wiring – Equipment – Digital Audio Mixer

Equipment: SoundCraft EPM 8

Technical Specifications: (1) 8 Mono + 2 Stereo Audio Console; (2) 100 mm Faders: L/R; (3) +48 V Phantom; (4) Frequency response 20 Hz to 20 kHz +/-1.5 dB

Input/Output: (1) 2 USB 2 ports; (2) 2x Stereo: L/R 1/4" TRS Phone; (3) Monitor: L/R Stereo Paired 1/4" TRS Phone; (4) 2 HDMI ports; (5) Component port; (6) TV tuner; (7) Digital Audio/Video Output; (8) **Mono Inputs** +/- 15 dB - Lo: 80 Hz - Mid: 150 Hz - 3.5 kHz (swept) - Hi: 12 kHz - Q: 1.5 ; (9) Stereo Inputs +/-15 dB - Lo: 80 Hz - Mid: 720 Hz - Hi: 12 kHz

Wiring – Equipment – Digital Audio Interface 1

Equipment: Echo AudioFire 12

Technical Specifications: (1) Sample rates: 44.1, 48, 88, 96, 176 and 192 kHz from internal clock; external clock range 32kHz to 192kHz; (2) Dynamic range: input 113dBA, output 114dBA; (3) Frequency response: 20Hz to 20kHz ±0.1dB; (4) THD + Noise: <0.002 percent.

Input/Output: (1) Analogue inputs: 12 quarter-inch TRS balanced/unbalanced jack sockets with individually switchable +4dBu/-10dBV sensitivity and 10kΩ impedance; (2) Analogue outputs: 12 balanced/unbalanced TRS quarter-inch jacks with individually switchable +4dBu/-10dBV output leve.

Wiring – Equipment – Digital Audio Interface 2

Equipment: MOTU Audio Express 6x6 FireWire Audio Interface

Technical Specifications: (1) FireWire/USB 2.0; (2) A/D Resolution **:**24-bit/96kHz; (3) Frequency response: 20Hz to 20kHz ±0.1dB; (4) THD + Noise: <0.002 percent; (4) 6-input, 6-output audio interface for Mac and Windows; (5) 6 x 8 physical input/output channels - all channels are available simultaneously and operate independently; (6) 8-bus digital mixer - routes and mixes all six inputs to any output pair; (7) Two mic/guitar combo jacks - provide hi-Z 1/4" guitar input or XLR mic input with phantom power, 20dB pad, Precision Digital Trim, and plenty of gain: (8) Standard sample rates up to 96kHz.

Input/Output: (1) Analog Inputs: 2 x XLR, 5 x 1/4"; (2) Analog Outputs: 5 x 1/4“; (3) Digital Inputs: 1 x S/PDIF; (4) Digital Outputs: 1 x S/PDIF; (5) Simultaneous I/O: 6 x 6; (6) Stereo 24-bit 96kHz S/PDIF digital in/out

Equipment Audio – Digital Audio Interface 3

Equipment: Behringer U-Control UCA202

Technical Specifications: (1) FireWire/USB 2.0; (2) 16-bit/48kHz converters

Input/Output: (1) USB Audio Interface; (2) Analog Outputs: 2 x RCA (3) Analog Inputs: 2 x RCA ; (4) Digital Outputs: 1 x Optical; (5) Simultaneous I/O: 6 x 6; (6) Stereo 24-bit 96kHz S/PDIF digital in/out

Wiring – Equipment – Portable Video Digital Converter

Equipment: ClearClick Video2 Digital Converter (2nd generation)

Technical Specifications: (1) Recording Resolution: SD 720x480 Pixels; (2) Smartphone/Tablet-Friendly MP4 Recording Format; (3) USB 3.0 flash drive (128 GB or less) or SD card (128 GB or less, Class 10 or higher); (4) 3.5mm to 3-AV cable; (5) Autostop/start.

Input/Output: (1) s-video; (2) HDMI out; (3) USB-A; (4) C-USB; (5) AV IN; (L-R In/Out)