

Introduction to Studio Design and Equipment



Studio setup with lighting truss, background stand with green screen and fluorescent lights





Wide angle shot of studio showing workstation on the right and teleprompter with computer left.



Workstation with equipment.



View showing: Datavideo SE-500 switcher, Datavideo Chromakeyer, Casablanca Editor (top center) , Program monitor, Preview monitor, Casablanca editor monitor (left) and voice-over mic.



Program monitor left and Preview monitor right. The preview monitor shows inputs to the switcher: 1. teleprompter camera, 2. Casablanca Editor, 3. composite image and 4. background (virtual set) video.



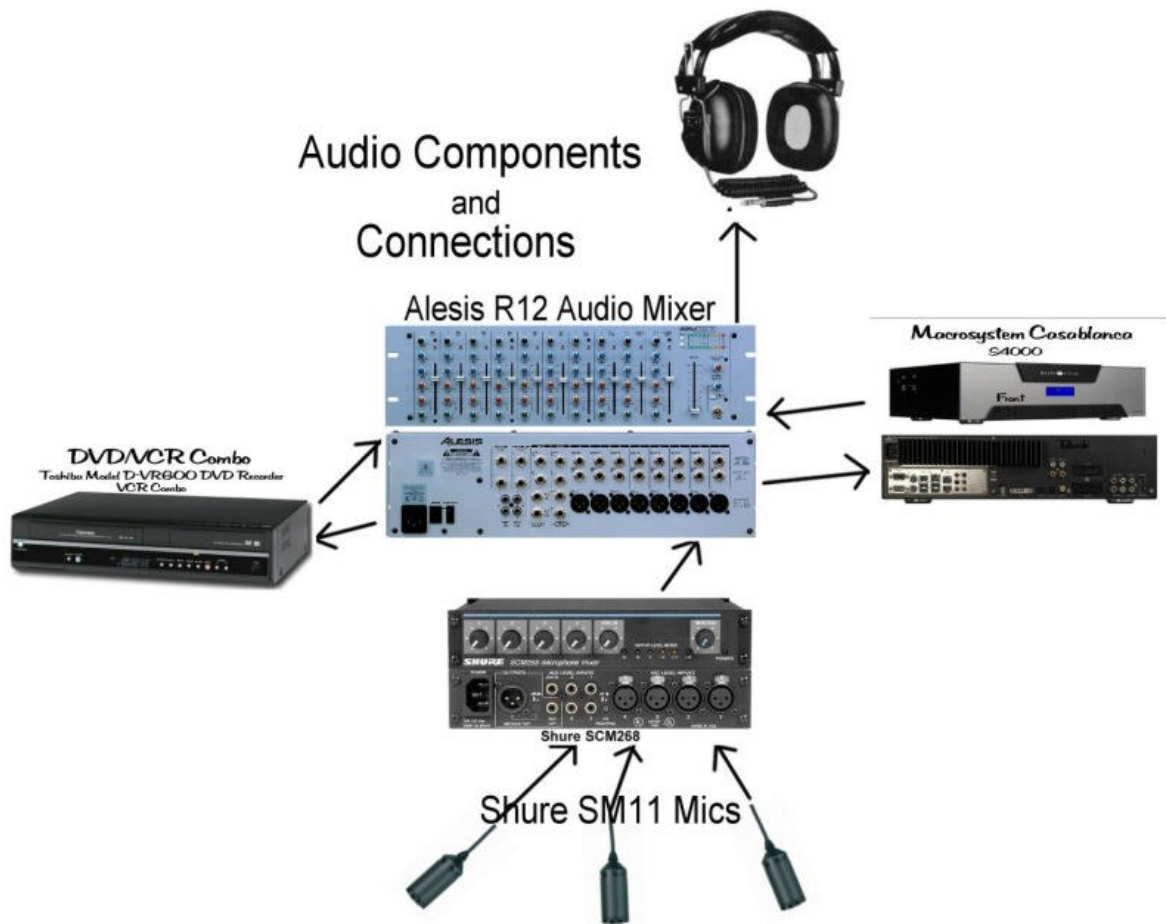
In this view, Program Out from the switcher (3) is being recorded on the Casablanca Editor (2).

This document provides an overview of the major pieces of equipment that make up the Integrated Studio Bundle. It also includes comments on why certain pieces of equipment were selected and how individual pieces of equipment work together. (NOTE: This list is not complete and is subject to change as new products appear and others are discontinued)

Schematics of Audio and Video Components provide guidance in understanding studio operation. To simplify analysis of studio setup, it is helpful to: (1) consider audio and video setups separately, and (2) think of audio and video signal flow as inputs and outputs. Arrows indicate signal pathways and direction.

Audio Components and Connections

Although Video Switchers often have Built-in Audio Mixers, including the DataVideo SE-500 which is used in this studio setup, it is often preferred to use a separate stand-alone Audio Mixer because of the greater control of audio signal strength and tone. In this setup, a separate, stand-alone Audio Mixer the Alesis 12R mixer is used. The Alesis mixer controls both tone and volume of the final audio mix. The Shure SCM-286 Microphone Preamp with 4 XLR inputs is used to control volume levels of individual mics. The final mic mix is output to the Alesis Audio Mixer as a line-level signal.



Video Components and Connections

In this studio setup the Video Editor becomes an integral part of the Video Production process. The benefits of this integration include: (1) the Video Production process becomes tapeless—the Video Editor functions as a digital video recorder, (2) All Post-Production effects of the Editor,

e.g. titling, transition effects, audio mixing and the fundamental tasks of Splitting and Trimming video scenes are available. Because the Editor functions not only as a digital recorder, but as a Video Source input to the Video Switcher, the edited production can be broadcast through the Switcher directly from the Editor.



Mobile Integrated Video Production, Post-Production and Broadcast Workstation

The Mobile Broadcast Workstation is the key to integration of studio functions. The size and ergonomics of the Workstation create a easy-to-use environment where there is seamless workflow from one studio task to the next including broadcast of the finished project. Sheldon Southerland, Technology Education Teacher, Dudley High School Greensboro, NC, said it best: "...It allows for proper organization and structure that allows the teacher and students to spend their time experiencing the great benefits of the system rather than trying to locate components and do set up---". A detailed description of the Mobile Workstation pictured with and without equipment is available on our website. <http://tinyurl.com/2ca76k7>



Studio Equipment

Each major piece of equipment in the Integrated Studio Bundle is illustrated below along with comments on its functions and why it was chosen.

Studio Lighting Kit: DayFlo-FX Chroma key Studio

It is well established that good studio lighting is essential for quality video production and is even more critical for convincing chromakey effects. Until recently, quartz- halogen lighting was really the only option and was used in virtually all studio setups. Quartz-halogen lights produce very bright light that is difficult to control. Barndoors, diffusers, gels, umbrellas, reflectors, flags etc. are all tools for controlling halogen light and in the hands of experts, can produce stunning results. On the other hand halogen lights consume a lot of power, are very hot and use expensive, short lived bulbs. Today fluorescent lights are rapidly becoming the standard for studio lighting. The benefits are many: cool lighting fixtures, low power consumption, long lived bulbs and most importantly produce a soft lighting effect ideal for studio lighting and perfect for lighting the chromakey screen. High cost has been an issue and relatively low level of light output. The fluorescent lighting kit chosen for this studio setup has set a new standard for cost effective, high output fluorescent fixtures. The DayFlo-FX Chromakey Studio Kit is a high quality, easy-to-use setup that ensures quality studio lighting for video productions and ideal background lighting for optimal chromakey effect.



Chroma Key Studio Lighting Kit Includes:

- 5: DayFlo-FX 3204 4-Bulb Fixtures**
- 4: 32" x 32" Softbox Heads**
- 1: DayFlo-FX Slim-Line 24" x 24" Softbox Kit**
- 1: 12' x 24' Chromakey Muslin Backdrop**
- 1: 12 x 24 Backdrop Support System**
- 1: 2-Section Boom Arm and Counter Balance**
- 4: 8' EosDeluxe Light Stands**
- 1: Set 3" Ball Bearing Rubber Wheels**
- 20: DayFlo-FX Daylight Kelvin Bulbs**
- 1: DayFlo-FX Spare Daylight Kelvin Bulb**
- (Extension cords, clamps, outlet strips etc.)**

Digital Video Editors

We have been Casablanca dealers for over 10 years! During this time we have installed and supported Casablanca Editors in many schools. The unmatched ease-of-use of Casablanca editors is the single most important factor in the success of school video production and editing studios. The White Paper on Turn-Key Studio Bundles, <http://tinyurl.com/63r6xax> has links to school studio productions using Casablanca Editors.

Casablanca: S-3000

The reliable All-in-One video editing system for everyone.

- Editing in one box for most video formats, including: DV, HDV, and AVCHD
- Direct display of HD footage while editing
- Flexible export of video in multiple SD or HD resolutions
- Standard DVD burner, Blu-ray burner optional
- DV and multiple USB connections





Casablanca: S-6000

Fastest road to a perfect movie. Has built-in Network Ethernet connection

- Blu-ray burner
- WLAN for fast wireless network connections
- Hard-drive 2000 GB (2TB)
- Network WLAN N, Ethernet



Lighting Truss: Eliminator Lighting Truss E-116

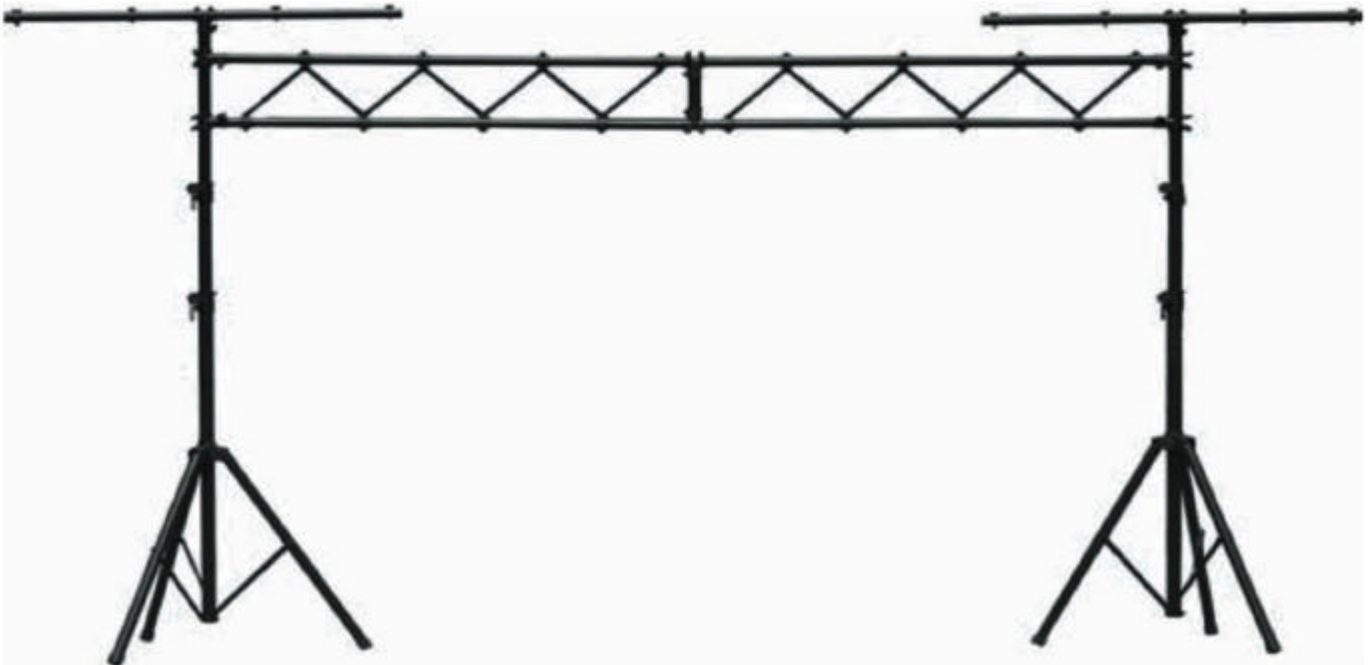
The lighting truss serves several functions in the studio:

- * Provides a very stable structure for mounting hair or back lights.

- * Provides scaffolding for power and lighting cables
- * Allows easy and safe addition of special effects lighting.
- * Functions to define foreground and background studio areas.

Lighting Truss Includes”

- * 10’ Trussing System
- * two 9’ heavy duty stands
- * two 3’ “T” bars
- * two 5’ I-Beam Trusses



TELMAX GS17 Teleprompter

There are few additions to a studio setup that provide more production value than a good Teleprompter. The Teleprompter chosen for this studio setup is the Tellmax GS17. It is a light weight unit that attaches to the tripod fluid head. This provides great flexibility in tilting and panning the teleprompter camera. It has a 17” LCD VGA monitor. The Smith-Victor ProPod V Heavy Duty tripod with fluid motion head is used for the Teleprompter setup. The included tripod dolly provides increased flexibility and mobility of the teleprompter. A PortaBrace Teleprompter Case is also included for safe transport and storage.



Teleprompter Software: ZaPrompt Pro 1.9

This is a powerful, easy to use program ideal for video. Features include:

- * . Built-in script editor**
- * Spell checker**
- * Font Coloring**
- * Adjustable Font Size**
- * Adjustable Speed**
- * Compatible with Remote Control and /or Jog Wheel**
- * Dual Screen Mode- Software flips teleprompter script for mirror**
- * and many more features**



VGA Splitter: Smart Solutions SPL-SVGA-4out

The VGA splitter not only allows output from the teleprompter computer to serve the teleprompter monitor, but also makes it available for viewing at other sites in the studio and workstation.



Smith-Victor ProPod V Heavy Duty Tripod with Fluid Head

The combination of Fluid Head and Tripod Dolly provides maximum flexibility for smooth movement and positioning of the Teleprompter.



PortaBrace Teleprompter Case

Video Switcher: DataVideo SE500

The DataVideo SE500 is a high quality, 4 input digital video switcher. It provides a wide variety of digital switch effects which can be selected to run automatically at different speeds or can be controlled manually with the “T” bar or “Take” bar. The SE500 also has a built-in audio mixer. However, in this studio setup, all audio signals are mixed and controlled in a separate audio system.

It also has a unique built-in Quad Split screen function which allow you to observe all 4 video inputs on the same preview monitor screen. Each input can also be selected for full screen preview. Tally lights indicate which input is selected for broadcast and which input is selected as next. The type of digital switch is also indicated.



This is the SE500 Preview monitor screen in the Quad split screen mode. The Red tally light indicates which input is selected as program out. The Yellow tally light indicates which input is selected for next output after the switch which in this case is a Wipe effect.



Chroma-Keyer: DataVideo DVK-100 Chroma Keyer

There are basically three approaches to achieving the Chromakey Effect: (1) use the Chromakey function built into many video switchers (the SE-500, however, does not have built-in chromakey), (2) Use a dedicated Chroma-Keyer, e.g., the DataVideo DVK-100, or (3) Create the effect in Post-Production on your video editor, e.g., the MacroSystem S-4100 PRO using the Blue Box World software. The DataVideo DVK-100 is the first dedicated Chroma-Keyer designed for Schools and Small Studios. The unit was recently critically reviewed by Anthony Burokas in Event DV trade magazine. Mr. Burokas has 15 years experience in event videography including chromakey effects. To Summarize: “---easy to use and setup”; “---“the DVK-100 has an EDGE ADJUSTMENT feature that allows you to shrink the keying edge to the actual edge of your talent”; “---“the DVK-100 has a SPILL ADJUSTMENT that dials that sickly green right out of the shot”; “we felt the output was good enough to use for live events and record right to master tape.”

Our experience with this unit in school studios has been very good! The ability to adjust multiple parameters including edge shrink and spill are effects not commonly available in small switcher chroma key units.. The ability to adjust the Chroma Key Window size elevates the art of chroma key to a new level of ease of use and professionalism. This adjustment allows the use of large virtual set backgrounds. The “Key Window” is simply rolled in from the sides, top and bottom to fit the available green screen area! Because chroma key has so many uses in school productions, this new unit along with the DayFlo Chromakey Studio

lighting kit, has transformed the video production capacity of small studios.

Features: (1) 2 camcorder inputs for foreground and 1 background input, (2) Key out background color selectable (blue, green or black) (3) S-Video and composite video input and output (4) Built in shrink function to reduce white or black color edge and (5) Chroma key Window Function.



Cameras

Sony HDR-FX7 MiniDV High Definition HDV

The Sony HDR-FX7 is a 3-chip, miniDV camcorder capable of recording and playback in both High Definition and Standard Definition. It has dual independent manual zoom and focus rings. It has a 20X optical zoom lens.

Input/Output Connections

- * iLINK (firewire) interface
- * HDMI Output
- * USB port
- * LANC Terminal
- * S-Video Output
- * External mic Input
- * Headphone Jack



Monitors: Preview, Program , Video Editor and Studio Reference Monitor

ViewSonic Widescreen LCD HDTV's with 10,000 to 1 Dynamic Contrast Ratio were selected for studio applications. Preview, Program ,Editor and Reference monitors are 19" ViewSonic Widescreen monitors

ViewSonic Monitor features:

- * LCD Optimum Resolution: 1366 x 768**
- * Aspect Ratio: 19-9**
- * Glass Surface: Anti-glare, anti-reflective coat**

Inputs

- * PC: VGA**
- * TV: composite (RCA), component and S-Video
480i, 480p, 720p and 1080i**
- * Audio: RCA (left/right) audio in**
- * Digital: HDMI**
- * Tuner: ATST/NTSC**

:



Audio Mixing: Alesis MultiMix 12R

All audio sources are mixed on the Alesis MultiMix 12R Audio Mixer as line-level signals. Alesis MultiMix 12R Audio Mixer features:

- * 8 mic/line (XLR and 1/4" balanced) inputs
- * Separate 1/4" balanced main and monitor outs
- * front panel headphone jack
- * pan control, peak indicator and 60 mm fader on each channel
- * 10 segment LED stereo meters



Microphone Mixer: Shure SCM268

Adding a microphone pre-amp to the audio mixing setup provides much greater flexibility and control of individual mic signal strength and the final mix of microphone signals. Audio from the 3 dynamic XLR SM11 mics at the news desk are connected to XLR inputs on the Shure SCM 268 mixer.. Each mic input has its own volume control and there is a master volume control. Training on studio operation will emphasize procedures for setting and matching mic signal strengths. There is a built-in LED output volume meter. The mixed and matched mic audio signal is output from the

SCM268 as a line level signal which is connected to the Alesis Audio mixer.



Stereo Audio Monitors: Behringer MS40 Digital Audio Monitor

Although the quality and volume of the final audio mix is judged from observing the LED volume meters on the Alesis mixer and listening to the mix with headphones, it is very helpful to have quality audio monitors during the production process. The Behringer MS40 audio monitors have a built-in amplifier with powerful woofers and tweeters. Speakers have individual volume controls plus bass and treble controls. They have stereo analog inputs with RCA connectors and a 1/4" headphone jack.



Headphones: KOSS QZ-99 Noise Reduction Stereophone

All studio audio calibrations require the use of headphones. Headphones are connected to the Audio Mixer headphone jack. These headphones have passive noise reduction to isolate listener from ambient sounds. They have a Stereo/Mono switch and volume control on earcup for easy level adjustment.



Voice Over Microphone: Shure SM58S

The term most commonly used to describe the Shure SM 58 vocal microphone is “legendary”. Although modestly priced, it has set the “world standard” for singing and speech. It has a highly effective, built-in spherical filter which minimizes wind and breath “pop” noise. It has a unidirectional (cardioid) pickup pattern which isolates the main sound source while minimizing unwanted background noise. The rugged construction, a proven shock-mount system, and a steel mesh grille ensure that even with rough handling , the SM 58 will perform consistently outdoors or indoors.

This microphone, normally found on the Workstation, is used for voice over commentary on video scenes in the Casablanca storyboard. The Editor's Audio Mix screen provides a "record" button which when selected will lay down a new voice over audio track of commentary as the scene is played.

When coupled with the included matching transformer, this dynamic mic can also be used with the Canon ZR960 camcorder for use in the field.



Shure SM 11 Lavalier Mic: (3)

The Shure SM 11 is a small, rugged, XLR dynamic mic. It does not require or use batteries! It is ideal for News Desk talent. It comes with both tie tack and tie bar mount.



Wireless Microphone System: Azden 325 Dual –Channel UHF twin Body-Pack Combo System

The 325 series is a high quality dual-channel UHF camera-mount wireless system that features 188 User-selectable frequencies displayed on an LCD screen to assure you of always finding a “free” channel.

Features

*** Discrete 2-channel Camera-mount UHF Receiver. This powerful features provides great flexibility in both studio and field recording. The ability to simultaneously record from two different transmitters opens up many new ways to gather news and setup studio recording sessions.**

- * New, Pivoting High-Gain Antenna
- * Mini-Jack Out with supplied 46" Mini and 24" XLR Cables.
- * Attached/Removable Shoe –Mount
- * Powered by 2 "AA" Batteries.



Studio Accessories

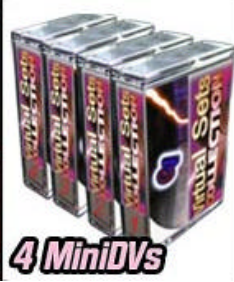
Virtual Sets: Elite Video Virtual Sets Collections

Demos: <http://tinyurl.com/32lbknx> There are several virtual set images used in school projects shown.

CHROMAKEY, in which a selected color (or colors) in a scene is replaced with a second video source, is the basis for the concept of "Virtual Sets". The best known application is, of course, the evening weather forecast. These Virtual Sets offer a wide variety of options; however, it is possible to use any video source, e.g. school logo, school

building, the Moon, etc. The Elite Video instructional DVD “Chromakey Magic: secrets of great chromakey” is included.

Available on



Production Music: Demos:
<http://tinyurl.com/2vd5qgj>

MUSIC 2 HUES

The Music 2 Hues CD collections offer the most affordable and well-rounded buy-out audio packages on the market today. The various CD collections feature completely royalty-free music (rock, jazz, swing, acoustic, island, country etc.) and sound effects for videographers.

a. Complete 70+ CD Production Library: This one has it all. By going to the MacroSystem US website, it is possible to listen to samples from each CD. (choice of 2 CDs)



Digital Effects: Demos: <http://tinyurl.com/24jd8cm>

A wide variety of high quality animated digital backgrounds are available for incorporating into your productions. Examples from "Digital

Juice” and “Digital Hotcakes” are included. These digital effects add interest and give your productions a more professional look.

