Tektronix

Grass Valley Model 110 HD High Definition Production Switcher



User selectable 720p or 1080i HDTV formats at either 59.94 or 60 Hz for greater flexibility

Internal frame stores for video and key provide instant recall of stored images

8 primary inputs and 2 dedicated key inputs plus downstream keyer fill

Affordable solution for film transfer and small-scale production

Superb quality in an economical package

The Grass Valley 110 HD Production Switcher is designed to meet the needs of small-scale digital production in high definition. Following the Grass Valley™ small switcher family tradition, the 110 HD switcher offers superb quality in an economical package. This switcher is ideal for film transfer, long-form editing, small mobiles, graphics and production suites.

Tektronix' first round of HDTV products demonstrates Tektronix' commitment to meeting the needs of the television community in high definition as well as standard definition. This initial offering — which also includes high definition routers, master control, and modular products — concentrates on providing affordable solutions in the ongoing transition to digital television.

The Model 110 HD provides high performance and unparalleled production power for its size. Built on production proven Grass Valley system architecture, this switcher's 3-bus multi-level mix/effects system gives you unmatched stability and picture quality.

Model 110 HD standard features include:

- Choice of field selectable 720p or 1080i HDTV formats allows greater operational flexibility
- Linear and luminance keying is standard in both the effects and the downstream keyer
- The Effects Keyer offers invert, mask, matte fill and breakaway key source selections as well as preset pattern
- Instant access to 8 primary background inputs
- 3 dedicated keyer inputs (2 key, 1 fill), for effects and downstream keyers, free up primary background inputs for other uses
- Mix/Effects provides Mix, Wipe, Key and Mask capability for greater creative freedom
- 10 Wipe Patterns — with a choice of reversal, positioning, variable edge softness or hard borders and modifiers — enable the creation of your own unique look
- E-MEM™ Effects Memory System gives you the freedom to program effects in any of 10 standard registers and quickly recall effects setups on any or all switcher levels



- Multiple Mattes for wipe, border, and key fill allow the selection of different colors for each of these functions
- 3 independently programmable rates available for the auto transitions:
  Background and/or Key
  Downstream Keyer Mix
  Fade-to-Black



- Internal Black and Background Generators are independently controlled and auto delegated, reducing the need for external black and background as inputs
- Program and preset background buses
- 3 independent GPI inputs enable simple external control
- Look-ahead preview system that shows the next effect, including wipe preview mode and a preview of what will come up from black
- Clean feed video output shows program output without the downstream keyer
- Internal frame stores, each with multiple pages for video or key, provide instant recall of previously stored images and can be used as key sources, key fills, or background videos
- Downstream Keyer provides a luminance or linear key on top of the final composite picture
- The Downstream Keyer may be previewed before taking it to air
- Fade-to-Black allows single button control when fading the final composite picture to black
- 3-bus multilevel mix/effects system allows independent or combined background and key transitions
- Independent Key and Background transitions
- Blanking Processor can be enabled to reinsert black during blanking intervals or pass embedded signals during blanking intervals
- RS-422 serial interface provides flexible control of external devices such as editors and effects systems

Option:
The optional Chroma Keyer with auto setup adds chroma keying capability to the effects keyer.

Specifications

Inputs

Serial Digital Video

Number: 8 Primary, 2 External Key, 1 External DSK Fill

Connectors: 75 ohm BNC (SMPTE 292M)

Nominal Amplitude: 800 mV pp terminated

Return Loss: > 15 dB, 5 MHz to 1.5 GHz

Analog Reference

Standard: 1080i Tri Level Sync (SMPTE 240M)

720p Tri Level Sync (SMPTE 296M)

Connector: 75 ohm BNC, looping

Return Loss: > than 30 dB, 0 to 10 MHz

Nominal Amplitude: ± 300 mV pp

Line Rate: 1080i: 33.7 KHz, 720p: 45 KHz

Outputs

Serial Digital Video

Number: 2 Program, 1 Preview, 1 Clean Feed, 2 Framestore, 2 Auxiliary

Connectors: 75 ohm BNC, self terminating (SMPTE 292M)

Amplitude: 800 mV PP (SMPTE 292M)

Return Loss: > 15 dB, 5 MHz to 1.5 GHz

Video Standards

1080i 59.94 or 60 Hz (SMPTE 274M)

720p 59.94 or 60 Hz (SMPTE 296M)

Control Panel

Dimensions	cm	in
Height	13.3	5.2”
Width	43.2	17.0”
Depth	34.9	13.75”
Weight	5.4kg	12lb

Electronics Frame

Dimensions	cm	in
Height	13.3	5.2”
Width	48.3	19.0”
Depth	57.7	22.75”
Weight	16kg	36lb

System Timing

Auto Timing Range: -22µs to +7.5µs from 0 Analog Reference

Switcher Output Delay: +1.5µs minimum

Pgm, Pvw, Clean Feed Output: +9µs from 0 Analog Reference (7.5µs autotime + 1.5µs switcher delay)

Framestore Output

Frozen: 0 Analog Reference

Moving (Grab): Untimed ~ 0.4µs after Framestore input

Aux Output: Untimed ~ 0.01µs after Aux input

Cables and Connectors

Control Panel Cable

(Custom Cable Connects Control Panel to Electronics Frame)

Connectors: D-15 (male connector on Frame end of cable, female connector on Panel end of cable).

Length: Standard: 30 meters (98 Ft.), Maximum: 100 meters (328 Ft.)

Serial Editor Interface Cable

Connector: D-9, (Frame has a female connector, for attachment to a male connector on the Frame end of the editor cable)

HD Video Cables

Connector: 75 Ohm BNC

Cable Type: Belden 1694A or equivalent

Maximum Length: 75 meters

Power Requirements

180 Watts maximum

Voltage: 90-240 VAC autorange, 50-60 Hz power factor corrected

Environmental Characteristics

Temperature Range

Specification: 20-30 degrees C (68-86 degrees F)

Operational: 0-40 degrees C (32-104 degrees F)

Relative Humidity: Up to 90% (non-condensing)

Warranty

Products offered by Tektronix are manufactured to provide the highest level of reliability and performance. Tektronix warrants these products against defects in materials and workmanship in accordance with the warranty statement applicable with each product. If any product fails during the warranty period Tektronix will provide the remedy set forth in the applicable warranty. A copy of the warranty applicable to a particular product offered by Tektronix may be obtained from your nearest Tektronix office.

Technical Support

TekCare is a comprehensive portfolio of software and hardware support services designed to ensure that you get the best performance from your Tektronix Video and Networking Products.

Services include complimentary basic support, hotline support, extended warranties, on-site service coverage, installation support, customer training and software update support. Each service can be customized to meet specific organization and system needs.

Ordering Information

110-HD: 3RU Frame (with power supply and internal fans), Control Panel, 30 meter Cable

110-HD-CKM: Chroma Key Module

For further information or the sales office nearest you, please contact:

Tektronix, Inc.
Video & Networking Division
PO Box 500,
M/S 58-965
Beaverton, OR 97077-0001
USA

Phone: (800) 547-8949 (North America)
No. America fax: (503) 627-7275
Europe fax: 44 (0) 1628 40 3301
Asia fax: (852) 2802 2996
Japan fax: 81 (3) 5992 9377
Latin America fax: (305) 477-5385
InfoFax: (800) 704-8843 (North America)
URL: http://www.tektronix.com/VND

Copyright © 1998, Tektronix, Inc. All rights reserved. Printed in the U.S.A. Information in this publication supersedes that in all previously published material. Specification and price change privileges reserved. Tektronix, Borderline and E-MEM are registered trademarks and Grass Valley, Chromatte, Krystal and Lamina are trademarks of Tektronix, Inc. All registered trademarks and trademarks are property of their respective holders.

11/98 FL5522 7.5M 2WW-8011