GRASS VALLEY GROUP

M-2100

DIGITAL MASTER CONTROL SYSTEM

PRODUCT DATA SHEET



FEATURES

- Simultaneous control of SDTV and HDTV channels from the same panel
- Supports multiple DTV formats:
  - SDTV 270 Mb/s (50/59.94 Hz)
  - HDTV 1080i, 720p (50/59.94/60 Hz) (59.94/60 Hz)
- Completely configurable system for greater value
- Designed for the future with true multichannel, multipanel functionality
- Integrated SqueezeBack™ effects
- Profile® PDR clip stacker
- Unmatched digital audio capabilities
- Extensive, flexible keying functionality
- Routing system interface and control

The Grass Valley M-2100 Digital Master Control System addresses the requirements of today's standard definition component digital facilities as well as emerging high definition broadcast needs. Simple expansion to multichannel, multiformat operation from a single control panel makes the M-2100 system ideally suited for facilities increasing their reach with additional channels and services. In addition to multichannel operation, the system offers extensive keying flexibility, separate and embedded internal digital audio processing, and a wide range of software-enabled options.

Designed as a true multichannel system, the M-2100 prepares your facility for the future. Your configuration options can be as compact as a single audio/video/control (A/V/C) processing frame or as complex as multiple control panels with multiple SDTV and/or HDTV A/V/C processing frames. Up to 16 on-air channels can be controlled from a single panel. Multiple panels are efficiently connected via the Control Panel LAN. This means greater facility utilization, increased revenue opportunities, and cost and space savings for your broadcast operations.

The M-2100 system employs component serial digital video processing to provide superior picture quality. The highest possible audio quality is achieved using 20 bit, 48 kHz AES/EBU digital audio processing. The SDTV system incorporates 270 Mb/s data rates to provide compatibility with 4:3 or 16:9 picture aspect ratios. The HDTV system incorporates 1.485 Gb/s rates supporting both 720p and 1080i.

Compatible with Windows® 95/98 and NT operating systems, the M-2100 is easily configured via a PC-based Graphical User Interface. For multiple frame operations, a single PC with LAN connection can be used to communicate with all frames.

User-Defined Configuration

An economical building block approach lets you configure your M-2100 system with the exact features you want. Later, you can easily upgrade and expand your system as your needs and budget require.

SqueezeBack™ Effects available on SDTV and HDTV

SqueezeBack effects provide an exclusive integrated DVE squeeze and tease effect, with foreground crops, positioning and compressing pictures. This allows you to move a picture to a preset location at a user-selectable rate. SqueezeBack effects also opens an external background input for promotion of your next event during program credits. This function includes protected setups and operator recalls of four preset positions. Audio lip sync delay is automatically taken care of and vertical ancilliary data is preserved. By integrating an effects system directly into the M-2100, the need for a separate, costly DVE is reduced.

Profile® Clip Stacker

Another unique feature of the M-2100 system is the Profile Clip Stacker. Integrated clip stacking offers single point control for viewing, stacking, and playing-to-air of clips stored on a Profile. With integration via an Ethernet LAN, this feature provides linked inputs, clip name transition logging, and clip name and duration displays. Profile control is integrated into the main master control panel for ease of operation.

Grass Valley Controls

Familiar Grass Valley button-per-function controls are another M-2100 system exclusive. Color differentiated function areas, large LED displays, and the traditional grouped function layout make M-2100 operation a snap. Operators who are familiar with the industry-standard Grass Valley Analog Master 21 system will quickly pick up the new features and functions.

Digital Audio Capabilities

One digital audio module, providing a single AES/EBU 20 bit, 48 kHz digital audio stream, is standard on both the SDTV and HDTV processing frames. This enables Lt, Rt (Left total, Right total) surround sound capability.

SDTV processing is scalable from one to four digital audio streams. The SDTV system allows embedded audio processing per crosspoint. This exclusive feature provides enhanced system flexibility and lower system cost.

The HDTV processing frame allows up to two additional audio processing modules, supporting six channels, for the best quality AC-3 audio. The HDTV system allows embedded audio processing on a global basis.

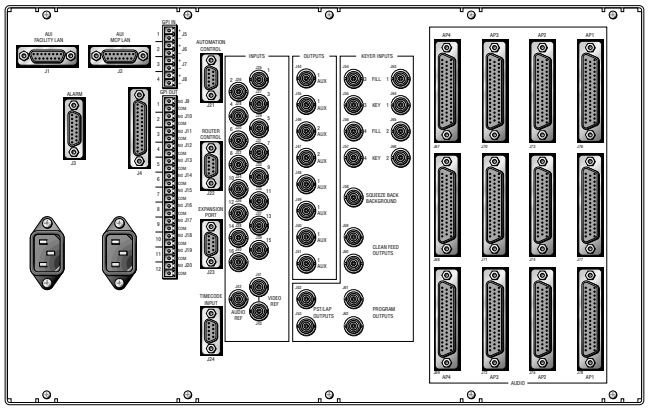
Hot Pluggable, Front Removable SDTV and HDTV Modules

We understand your need for uninterrupted reliability, so we have included another Grass Valley exclusive: hot pluggable, front removable modules and standard dual power supplies.

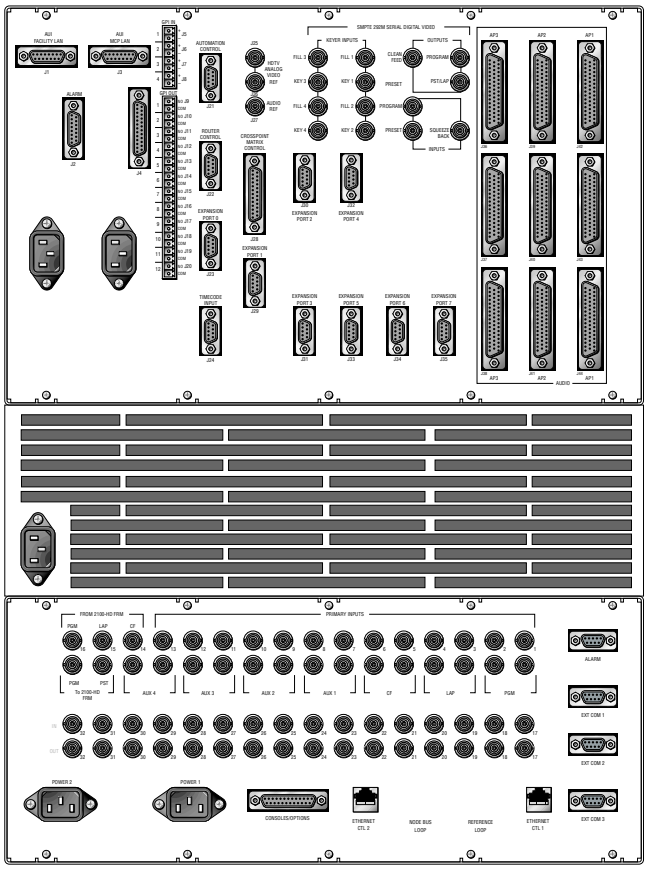
Extensive Keying Capabilities

Extensive, flexible keying capabilities are scalable to meet your system's needs. Configure your SDTV system by choosing optional keyer boards. Each board contains dual luminance linear keyers with Borderline® and drop shadow functionality. Two of the optional keyer boards can be added to your SDTV system, providing four luminance linear keyers. The optional chroma keyer will allow the dual keyer module to become a single luminance linear keyer with chroma keyer.

Configure your HDTV system with dual luminance linear keyer functionality: up to four luminance linear keyers or frame store keyers with single luminance linear keyer in place of one or both of the dual keyer modules.



M-2100 SDTV PROCESSING FRAME



M-2100 HDTV PROCESSING FRAME AND COOLING FAN

Software-Enabled Options

A number of optional capabilities can be accessed from the convenience of your own facility. Software options (such as wipe transitions, key borders, SqueezeBack effects, embedded audio processing, transition logging, split audio-video transitions, automatic subscription authorization, and serial tally) can be unlocked for immediate demonstration or permanently enabled when purchased.

Integration with Grass Valley Series 7000/7500 Routing Systems

Any combination of router source selections can be easily accomplished from the 2100-RPS control panel option. For proper transition logging, source names are carried from the Series 7000/7500 assignments to the master control panel displays above the program bus. Unique attribute programming allows groups of devices with identical control parameters (including parallel or serial machine control, serial protocols, embedded audio and preroll times) to have parameters defined and adjusted for the prefix group.

M-2100 Options

The M-2100 includes Integrated Machine Control functionality for easier operation. The M-2100 Device Control Engine enables RS-422 serial machine control of up to 30 dedicated or router linked Sony® or Ampex® protocol VTRs.

Clock Displays of segment and remaining time are displayed on the control panel and can be remotely displayed via a clock driver connection on the back of the panel. Remote Clock Display provides greater flexibility and convenience by allowing viewing from locations around the control room.

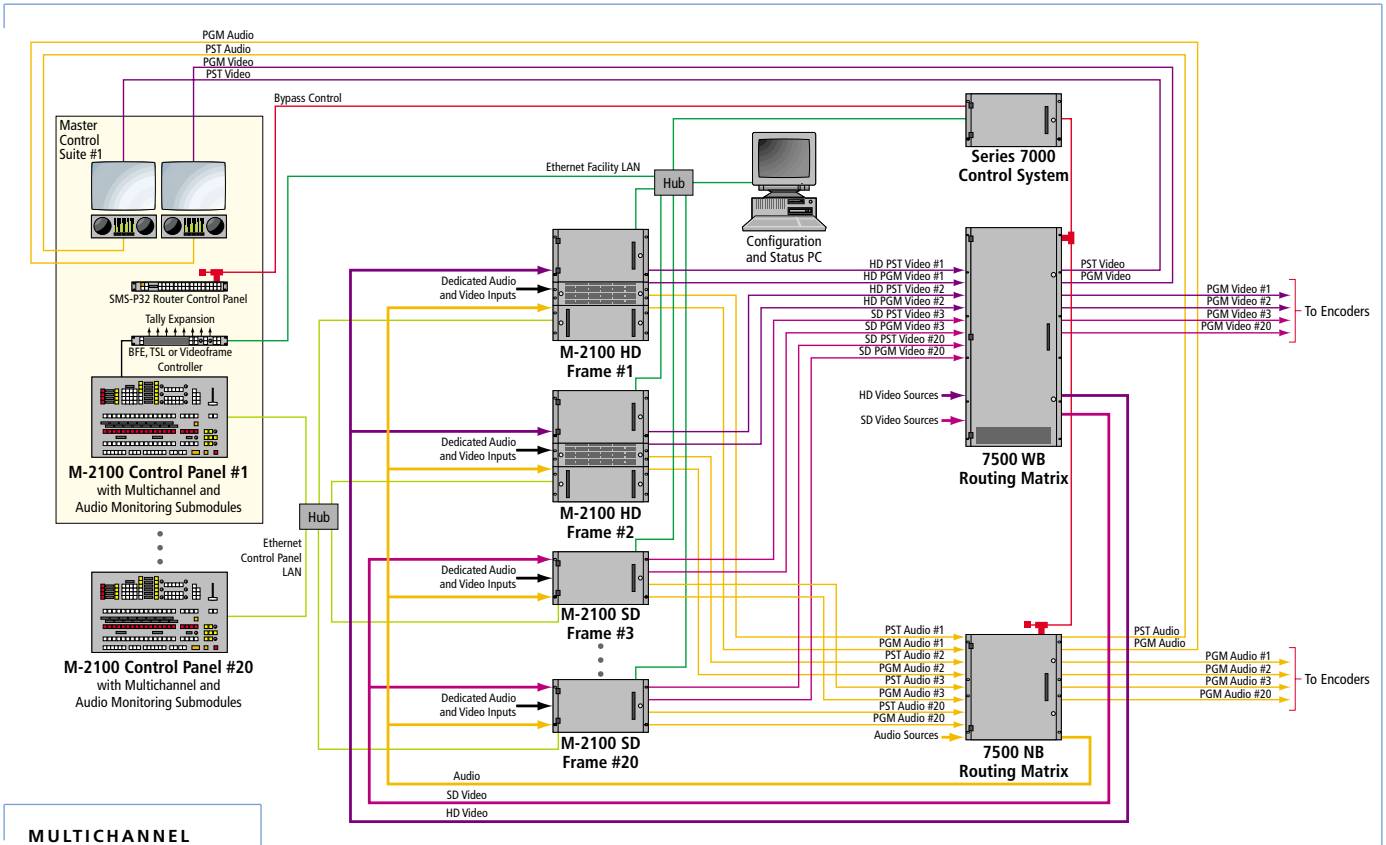
The control panel also displays Transition Rate and Transition Delay information in either seconds or frames. Eight character LEDs above the program bus crosspoints indicate configured crosspoint name, dedicated matte source, Profile clip name, or router source names–depending on your system configuration.

Input non-sync detection and indication of all video/audio sources (including program/preset background inputs, key cut, key fill, and all audio input channels) alerts operators of potential problems for quick remedy.

The manual lever arm assembly enables manual transition control of any audio or video transition, including background program/preset wipes and audio mixes. Transitions include: Take, Fade/Fade, Take/Fade Mix (crossfade/dissolve), and Fade/Take. Additional customer defined transitions can be configured as required, to enable audio lead/lag functionality. Four wipe patterns are optionally included with edge softness and pattern reverse modifiers.

As-Aired transition logging, configuration setups, error reporting and diagnostics, chroma keyer super-user setup, TIFF file transfers, and software upload are all accessible or configurable from an external PC compatible computer running Windows 95/98 or NT operating systems.

Open automation protocol enables complete control of the processing frame with or without the manual control panel.



MULTICHANNEL MONITORING AND CONTROL

M-2100 SPECIFICATIONS

INPUTS – SDTV SYSTEM

Video System

- All inputs 270 Mb/s serial digital, 75 Ω BNC
- 16 primary: Pgm, Pst, Aux
- 4 key source and 4 key fill
- 1 SqueezeBack™ background

Audio System

- All inputs are 48 kHz AES3
- 16 Primary: Pgm, Pst, Aux
- 4 discrete audio only inputs

External Reference

- 1 looping video reference: NTSC/PAL color black
- 1 terminating audio reference: 48 kHz clock/signal
- 1 longitudinal timecode input (LTC)

INPUTS – HDTV SYSTEM

Serial Digital Video

- All inputs 75 Ω BNC, (SMPTE 292M)
- Cable equalization automatic for up to 100 meters of Belden 1694A @ 1.5 Gb/s
- Return loss (1 MHz to 1500 MHz): 15 dB minimum

External Reference

- Tri Level Sync (SMPTE 240M) 50, 59.94 and 60 Hz
- 75 Ω BNC, looping connector
- Nominal amplitude: ±300 mV pp
- Line rate: 1080i: 33.7 kHz, 720p: 45 kHz
- 1 terminating audio reference: 48 kHz clock/signal

OUTPUTS – SDTV/HDTV SYSTEMS

Video System

- All outputs 75 Ω BNC
- 2 program, 2 look ahead preview and 2 clean feed
- 4 aux buses with dual outputs

Audio System (per module)

- All outputs 48 kHz AES3
- 2 program, 2 preset and 2 clean feed
- 4 aux buses with dual outputs
- 2 monitoring outputs
- 3 Meter drives: 1 program, 1 preset, 1 off-air

HDTV VIDEO STANDARDS

- 1080i: 50, 59.94 and 60 Hz (SMPTE 274M)
- 720p: 59.9/60 Hz (SMPTE 296M) (switch selectable)

INTERFACES

Processing Frame

- GPI: Fully configurable 4 inputs/ 12 outputs, each with individual removable "phoenix" connectors
- Alarms: 4 dry contact programmable
- Router control: 10-BaseT Ethernet
- Automation control: RS-422 9-pin female "D" connector
- Tally expansion port: RS-422 9-pin female "D" connector

Manual Control Panel

- Alarms: 2 dry contacts
- Timecode Outputs: 2 XLR connectors
- Segment and remaining

Manual Control Panel (SDTV/HDTV)

DIMENSIONS	CM	IN
Height	15.5 cm	6.12 in.
Width	68.5 cm	27.0 in.
Depth	43.8 cm	17.25 in.
Weight	21.8 kg	48 lb.

SDTV Processing Frame

DIMENSIONS	CM	IN
Height (6 RU)	26.0 cm	10.25 in.
Width	48.26 cm	19.0 in.
Depth	47.0 cm	18.5 in.
Weight	25.45 kg	56 lb.

HDTV Processing Frame

DIMENSIONS	CM	IN
Height (6 RU)	26.67 cm	10.5 in.
Width	48.26 cm	19.0 in.
Depth	47.0 cm	18.5 in.
Weight	26.31 kg	58 lb.

HDTV Crosspoint Matrix

DIMENSIONS	CM	IN
Height (4 RU)	18.0 cm	7.0 in.
Width	48.26 cm	19.0 in.
Depth	49.0 cm	19.3 in.
Weight	17.69 kg	39 lb.

Initial Warranty Coverage

Grass Valley Group products are built to exact standards and are backed by an excellent hardware and software warranty – one year or 15 months from date of shipment. Under warranty services you will receive these critical services:

- Technical phone support (regular business hours)
- On-line frequently asked question database
- Emergency "down" service support
- Advance exchange on product modules

Support Packages Available

We have built our support packages around critical product life cycles with a focus on helping reduce the cost of maintenance.

First Time Product Purchaser Discount

Support services that ensure your product gets off on the right foot are offered to first-time product purchasers at reduced package prices.

- Extended Support Contract
- Impak™ Training
- SmoothStart™/Mini SmoothStart

Ongoing Support for All Products

Service Packages designed to make your job easier, and excellent for non-technical staffed sites, or reduced staff facilities. Packages that provide long-term support and more on-site assistance, at reduced package prices.

- SureStep complete on-site package
- NextStep personalized phone training
- Quarterly preventative maintenance
- Remote diagnostic setup services

Other Services Available

- 1-5 year comprehensive contracts
- Advanced exchange contracts
- Customer product training
- Technical support service contracts
- On-site professional services
- Spares kits and repair services
- Software update services
- Customized service contracts
- System network consulting

*Some country and product restrictions apply

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