

DENSITÉ series

LGK-3901

3G/HD/SD Logo Inserter & Downstream Keyer

DSK-3901

3G/HD/SD Downstream Keyer

Guide to Installation and Operation

M887-9900-200

25 Jan 2010



Miranda

Technologies Inc.

3499 Douglas-B.-Floreani
St-Laurent, Québec, Canada H4S 1Y6

Tel. 514-333-1772

Fax. 514-333-9828

www.miranda.com

© 2010 Miranda Technologies Inc.

Compliance Information

Electromagnetic Compatibility

- This equipment has been tested for verification of compliance with FCC US Code of Federal regulations (CFR): Part 15, Subpart B, Class A requirements for Digital Devices, Unintentional Radiators.
- This equipment complies with the requirements of:
 - 2004/108/EC - Electromagnetic Compatibility (EMC) Directive.
 - EN 55022 Class A, Radiated Emissions.
 - EN 55024 Class A, Conducted Emissions
 - EN 61000-4-2, -4-5, -4-11, Electromagnetic Immunity
 - EN 61000-3-2 & -3-3, Electromagnetic Disturbance in Supply Systems

How to contact us:

For technical assistance, please contact the Miranda Technical support centre nearest you:

Americas

Telephone:

+1-800-224-7882

e-mail:

techsupp@miranda.com

Asia

Telephone:

+852-2539-6987

e-mail:

asiatech@miranda.com

Europe, Middle East, Africa, UK

Telephone:

+44 (0) 1491 820222

e-mail:

eurotech@miranda.com

China

Telephone:

+86-10-5873-1814

e-mail:

asiatech@miranda.com

France (only)

Telephone:

+33 (0) 1 55 86 87 88

e-mail:

eurotech@miranda.com

Visit our web site at www.miranda.com

Table of Contents

1 LGK-3901 3G/HD/SD Logo Inserter & Downstream Keyer 1

1.1 Introduction 1

1.2 Features 2

1.3 Functional Block Diagram 3

2 DSK-3901 3G/HD/SD Downstream Keyer 4

2.1 Introduction 4

2.2 Features 5

2.3 Functional Block Diagram 6

3 Applications 7

3.1 Downstream Branding 7

3.2 Rich Graphics Keying – (DSK-3901) 8

3.3 Downstream Parallel Branding 9

3.4 Low-Cost Channel Branding for Specialty Channels 10

3.5 Master Control Switching 11

3.6 Master Control Backup 12

4 Features 13

4.1 Front Card-Edge Interface 13

4.1.1 CPU Card Front Edge 13

4.1.2 FPGA Card Front Edge 14

4.2 Compact Flash Memory 14

4.3 Video Standards 15

4.3.1 Output 15

4.3.2 Input 15

4.3.3 Propagation Delay 15

4.4 Reference 16

4.4.1 Reference Types 16

4.4.2 Adjusting Reference Timing 16

4.4.3 HD-SDI Example (1080i) 17

4.5 Audio Processing 19

4.5.1 Route Manager 19

4.5.2 Example Route Manager Templates 20

4.5.3 Voice-overs 20

4.5.4 Easyplay 21

4.6 Video AB Mixing 21

4.7 Store Memory 22

4.8 Keying Graphics 23

4.8.1 External Graphics 23

4.8.2 Internal Media 23

4.8.3 Emergency Alert System (EAS) 25

4.8.4 Temperature Probe 28

4.8.5 Keying Parameters 29

4.9 Preview Channel 32

4.9.1	Preview Input / Mix B Input.....	32
4.9.2	Preview Output	32
4.9.3	Active Preview	33
4.10	General Purpose Interface (GPI).....	34
4.10.1	GPI Inputs and Macros.....	34
4.10.2	GPI Outputs and Events.....	35
4.11	Graphics Co-Processors	36
4.11.1	Command Forwarding to a Co-Processor.....	36
4.11.2	Automatic Keyer Management	38
4.12	Closed Captions	40
4.13	Timecode.....	40
4.14	Message Logging	41
4.14.1	Logging Level	41
4.14.2	External Logging.....	41
4.14.3	Local Logging	41
4.15	System Configuration	42
4.15.1	Importing Configurations	42
4.15.2	Exporting Configurations	43
4.15.3	Previous Configuration	43
5	Installation.....	44
5.1	Unpacking LGK-3901	44
5.2	Unpacking DSK-3901	44
5.3	Installation in the Densité frame	44
5.4	Rear Panel and Connectors	45
5.4.1	PGM IN.....	45
5.4.2	FILL 1 IN and KEY 1 IN.....	46
5.4.3	FILL 2 IN and KEY 2 IN.....	46
5.4.4	PGM OUT.....	46
5.4.5	PVW OUT.....	46
5.4.6	REF IN.....	46
5.4.7	ETH.....	47
5.4.8	COM 1	47
5.4.9	COM 2	47
5.4.10	GPIO / LTC / AES IN.....	48
5.5	Terminal Block Adaptors	49
5.5.1	LGK-44-TBA-75 / DSK-44-TBA-75.....	49
5.5.2	LGK-44-TBA-110 / DSK-44-TBA-110.....	50
6	Operation.....	51
6.1	Control Options.....	51
6.2	Card-Edge Status LED	51
6.3	Local Control using the Densité Frame Control Panel.....	53
6.3.1	Overview.....	53
6.3.2	Menu for local control	53
6.4	Remote Control Using iControl.....	54
6.4.1	The iControl Graphic Interface Window	54
6.4.2	Control	58
6.4.3	Preview	59

6.4.4	Video Config.....	60
6.4.5	Reference.....	60
6.4.6	Timecode	61
6.4.7	Monitoring	62
6.4.8	Show Signal Path.....	63
6.4.9	Web Page	63
6.4.10	Test	64
6.4.11	Hardware Config	64
6.4.12	Options.....	65
6.4.13	Alarm Config	67
6.4.14	Info	71
7	Configurator Tool.....	72
7.1	Opening a Configuration	72
7.2	System Settings	72
7.3	Store Manager	75
7.4	Route Manager	76
7.4.1	Inputs	77
7.4.2	Audio Mix Blocks.....	77
7.4.3	Audio Delay Blocks	78
7.4.4	Outputs.....	78
7.5	Gain Mode.....	79
7.6	Shuffle Mode	80
7.7	Licences	81
7.8	Saving a Configuration.....	81
7.9	Exporting Capabilities File	81
8	Web Interface	82
8.1	Connecting	82
8.2	Log In	82
8.3	Home.....	83
8.4	Front Panel Mirror	83
8.5	System Information	84
8.6	Media Management	86
8.7	Audio Templates	87
8.8	System Backup	88
8.9	System Reset.....	89
8.10	Software Upgrade	90
9	Options	91
9.1	LGK-3901 Options	91
9.1.1	LGK-3901-SD.....	91
9.1.2	LGK-3901-HD-UPG	91
9.1.3	LGK-3901-OPT-TXT	91
9.1.4	LGK-3901-8GB-UPG	91
9.1.5	LGK-3901-OPT-AUD	92
9.1.6	LGK-3901-OPT-ABMIX.....	92
9.1.7	LGK-3901-OPT-EAS.....	92
9.1.8	LGK-3901-OPT-TEMP	92
9.2	DSK-3901 Options	93

GUIDE TO INSTALLATION AND OPERATION

9.2.1	DSK-3901-SD	93
9.2.2	DSK-3901-HD-UPG.....	93
9.2.3	DSK-3901-UPG	93
9.2.4	DSK-3901-OPT-AUD.....	93
9.2.5	DSK-3901-OPT-ABMIX.....	93
10	Specifications	94
ANNEX 1	– Front Panel Menu	96
ANNEX 2	– GPI Output Event List	121

1 LGK-3901 3G/HD/SD Logo Inserter & Downstream Keyer

1.1 Introduction

The Densité LGK-3901 is a low cost, single card channel branding processor, capable of inserting up to five layers of graphics into 3G/HD/SD. Three of the keying layers can be fed by internally stored still/animated graphics, and two layers are fed by external graphics devices. It also offers character generation and clock insertion. The LGK-3901 is ideal for pre-rendered graphics, although it can also be used for dynamic rendering of lower thirds.

A template-based character generator (Easytext) can insert crawl layers or static (dynamically updated) text layers. High quality characters are output with 256 level anti-aliasing, with easy drop shadow and transparency control. Unicode characters in TrueType fonts are available from 6 to 600 pixels, in any RGB color.

The LGK-3901 can be used with the Xmedia Suite's work order management, graphics preparation, asset management, data interfacing and playout automation workflow tools. The Xmedia Suite streamlines graphics operations in localized and distributed environments, and contributes to lower costs, faster delivery, and greater creativity.

The LGK-3901 allows further upgrades and purchasable options which provide additional features such as AB mixing, audio mixing (including AB mixing, voice-overs and Easyplay clip playout), Emergency Alert System (EAS) support (USA), and Temperature Probe.

The integrated audio engine provides multi-channel mixing and voice-overs. Audio is accepted as embedded SDI, or by four external AES inputs; and background audio is automatically ducked during voice-overs. Multi-channel audio clip storage and playback of up to 8 channels in 2 streams (Easyplay) is also supported.

1.2 Features

MODULAR, 3G/HD/SD BRANDING PROCESSOR

- Single, modular card channel branding processor
- Module is housed in Densité 3 frame, with up to 10 cards (channels) per frame
- Supports 3G/HD/SD (1080p59.94, 1080p50, 1080i59.94, 1080i50, 720p59.94, 720p50, 525i59.95, 625i50)
- Uses widely adopted Oxtel automation protocol (Ethernet, RS-232/422)
- Manual control options include Branding Panel, Xpanel GUI, and iControl PC-based control

MULTI-LAYERCHANNEL

- Five independent keying layers: three can be fed by internally stored stills/animations/text, and two layers are fed by external graphics devices (dual fill & key inputs)
- Integral storage capacity of up to 4000 images/animations/text
- Independent preview output
- AB mixing of video sources for cuts, cross-fades and V-fades with variable rates (LGK-3901-OPT-ABMIX)
- Automated character generation for static or data-driven text rendering and crawls (LGK-3901-OPT-TXT)
- In-vision digital/analog clock insertion (LGK-3901-OPT-TXT)
- Emergency Alert System (EAS) support (USA only) (LGK-3901-OPT-EAS)
- Temperature probe for dynamic display of temperature in Celsius or Fahrenheit (LGK-3901-OPT-TEMP)

DYNAMIC AUDIO PROCESSING

- AB mixing of multi-channel audio sources for cuts and variable rate fades (LGK-3901-OPT-AUD/OPT-ABMIX)
- Multi-channel voice-overs from embedded SDI or external AES inputs (LGK-3901-OPT-AUD)
- Wide shuffles and per-channel control of gain level, trim, phase and mute (LGK-3901-OPT-AUD)
- Dynamic selection of audio preview points and metering (LGK-3901-OPT-AUD)
- Fade to silence and configurable audio delays (LGK-3901-OPT-AUD)
- Multi-channel audio clip playback of up to 8 channels in 2 streams (Easyplay) (LGK-3901-OPT-AUD)

STREAMLINED WORKFLOW

- Fully compatible with Xmedia Suite branding graphics automation and asset management system for highly productive, cost-saving workflows
- Easy integration into an Adobe After Effects based workflow, using the Xmedia Suite After Effects Plug-in
- Media management over Ethernet using Xmedia Suite, OxSox, or FTP

ROBUST DESIGN

- Compact flash memory for O/S, software and graphics storage
- Robust Linux architecture (like Imagestore 750)
- Densité 3 frame offers redundant, hot swappable power supplies
- Mechanical bypass of program input to program output
- Dedicated GPI support for 8 GPI inputs and 8 GPI outputs
- One line FIFOs on each input for simplified system timing
- Easy diagnostics via Densité 3 front panel, video thumbnails over IP, and iControl monitoring & control
- Built-in web server providing front panel control, system information, message logs and diagnostics, media management, audio templates, system backup and restore and software upgrades
- Configuration tool for granular control of system setup and audio route management

COMPREHENSIVE Densité RANGE

- LGK-3901 processor can be easily combined with other Densité modules in the 3RU frame, including routers, DAs, converters, reference, and monitoring modules

1.3 Functional Block Diagram

The following block diagram shows the full functionality of the LGK-3901.

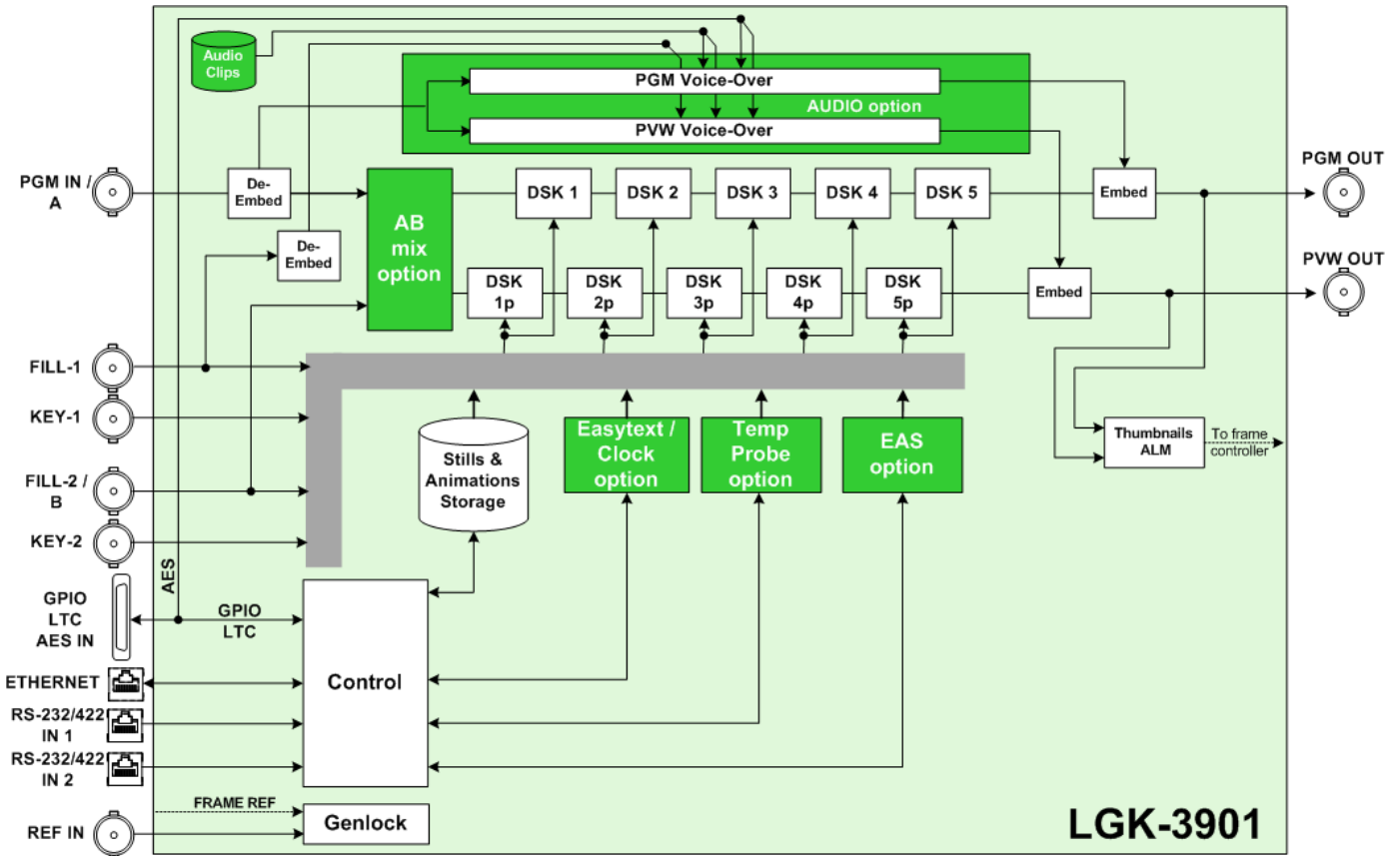


Figure 1.1 Functional block diagram LGK-3901

There are line FIFOs for each video input feeding two video channels (PGM and PVW). Embedded audio is passed through unchanged, or manipulated by the audio engine (requires the LGK-3901-OPT-AUD option).

AB mixing is supported on the PGM channel (requires the LGK-3901-OPT-ABMIX option) and the PVW channel input can also be switched. Each video channel supports five keyers which may receive fill and key from three internal stores or two external fill and key inputs. Each of the stores may contain a still image, animation, Easytext template, clock, or Emergency Alert System (EAS) crawl.

The integrated audio engine provides multi-channel AB mixing and voice-overs. Background audio is automatically ducked during voice-overs. Audio can be accepted as embedded SDI audio or by four external AES inputs.

Easyplay audio clip storage and layout is available in version 3.1 software.

2 DSK-3901 3G/HD/SD Downstream Keyer

2.1 Introduction

The Densité DSK-3901 is a low cost, single card downstream keyer, with two independent pairs of fill and key inputs. This 3G/HD/SD keyer is ideal for inserting two external character generator feeds over program video. Up to 10 channels of keying can be housed in a single 3RU Densité frame.

A dedicated full preview channel offers an operator the option to feed the same signal to the program and preview chains, or use a different signal for the preview chain using the Fill-2 input.

The DSK-3901 can be manually controlled by the Branding Panel, and under automation using the widely adopted Oxtel protocol.

The DSK-3901 allows further upgrades and purchasable options which provide additional features such as AB mixing, audio mixing and audio voice-overs.

The integrated audio engine provides multi-channel AB mixing and voice-overs. Audio is accepted as embedded audio or by four external AES inputs, and background audio is automatically ducked during voice-overs.

The DSK-3901 card lacks support for the internal stores that are found on LGK-3901. Consequently it has no store-related features such as still images, animations, clocks and Easytext. Nor does it have support for audio clip playout via the Easyplay feature. Upgrade options may however be purchased to convert a DSK-3901 card into an LGK-3901 (see section 9.2).

2.2 Features

MODULAR, 3G/HD/SD DOWNSTREAM KEYER

- Single, modular card downstream keyer with dual, independent fill and key inputs
- Two independent keying layers fed by external graphics devices (dual fill & key inputs)
- Independent preview output
- AB mixing of video sources for cuts, cross-fades and V-fades with variable rates (LGK-3901-OPT-ABMIX)
- Module is housed in Densité 3 frame, with up to 10 cards (channels) per frame
- Supports 3G/HD/SD (1080p59.94, 1080p50, 1080i59.94, 1080i50, 720p59.94, 720p50, 525i59.95, 625i50)
- Uses widely adopted Oxtel automation protocol (Ethernet, RS-232/422)
- Manual control options include Branding Panel, Xpanel GUI, and iControl PC-based control

DYNAMIC AUDIO PROCESSING

- AB mixing of multi-channel audio sources for cuts and variable rate fades (DSK-3901-OPT-AUD/OPT-ABMIX)
- Multi-channel voice-overs from embedded SDI or external AES inputs (DSK-3901-OPT-AUD)
- Wide shuffles and per-channel control of gain level, trim, phase and mute (DSK-3901-OPT-AUD)
- Dynamic selection of audio preview points and metering (DSK-3901-OPT-AUD)
- Fade to silence and configurable audio delays (DSK-3901-OPT-AUD)

ROBUST DESIGN

- Compact flash memory for O/S and software
- Robust Linux architecture (like Imagestore 750)
- Densité 3 frame offers redundant, hot swappable power supplies
- Mechanical bypass of program input to program output
- Dedicated GPI support for 8 GPI inputs and 8 GPI outputs
- One line FIFOs on each input for simplified system timing
- Easy diagnostics via Densité 3 front panel, video thumbnails over IP, and iControl monitoring & control
- Built-in web server providing front panel control, system information, message logs and diagnostics, audio templates, system backup and restore and software upgrades.
- Configuration tool for granular control of system setup and audio route management

COMPREHENSIVE DENSITÉ RANGE

- DSK-3901 processor can be easily combined with other Densité modules in the 3RU frame, including routers, DAs, converters, reference, and monitoring modules

2.3 Functional Block Diagram

The following block diagram shows the full functionality of the DSK-3901.

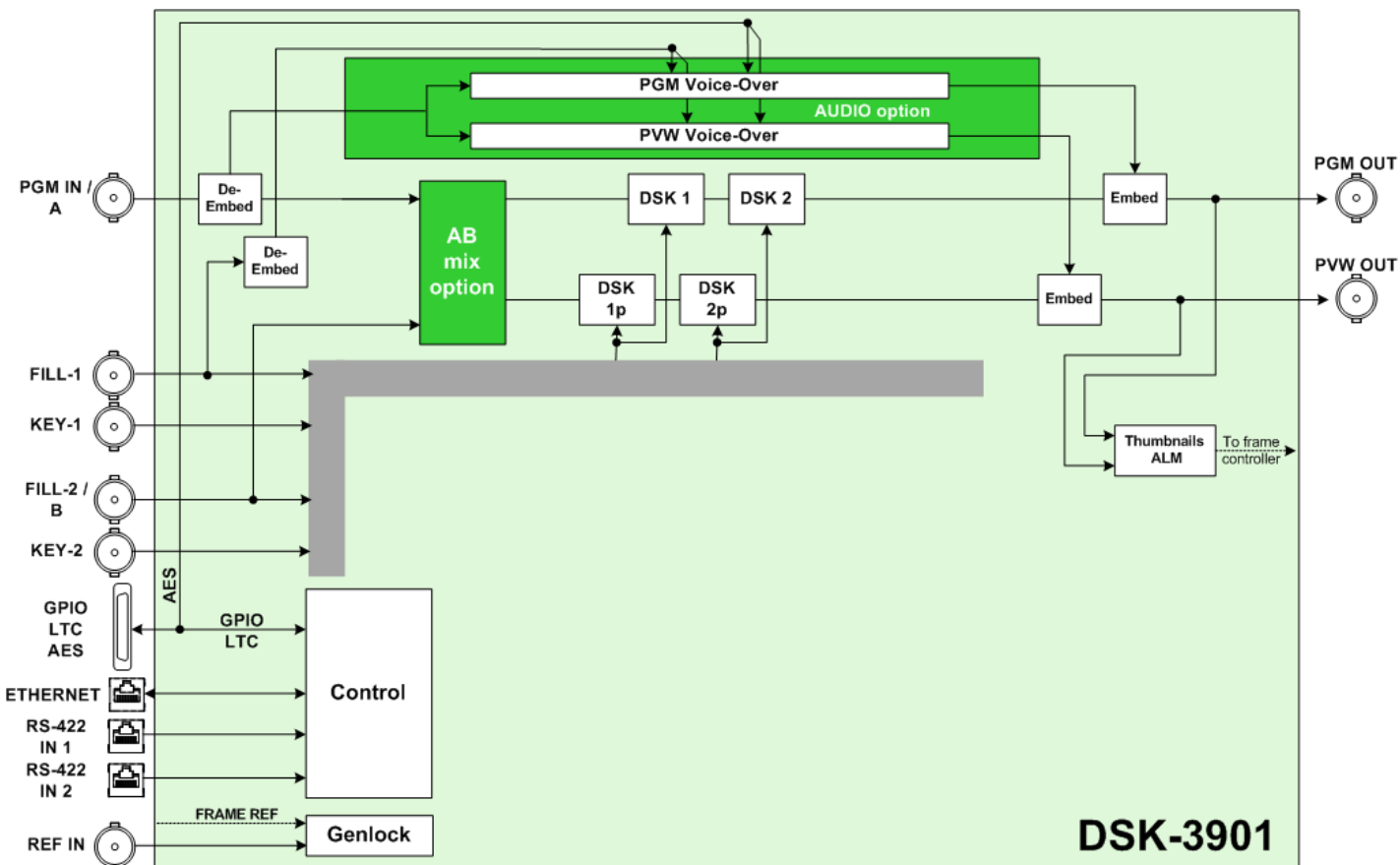


Figure 2.1 Functional block diagram DSK-3901

There are line FIFOs for each video input feeding two video channels (PGM and PVW). Embedded audio is either passed through unchanged, or manipulated by the audio engine (requires the DSK-3901-OPT-AUD option).

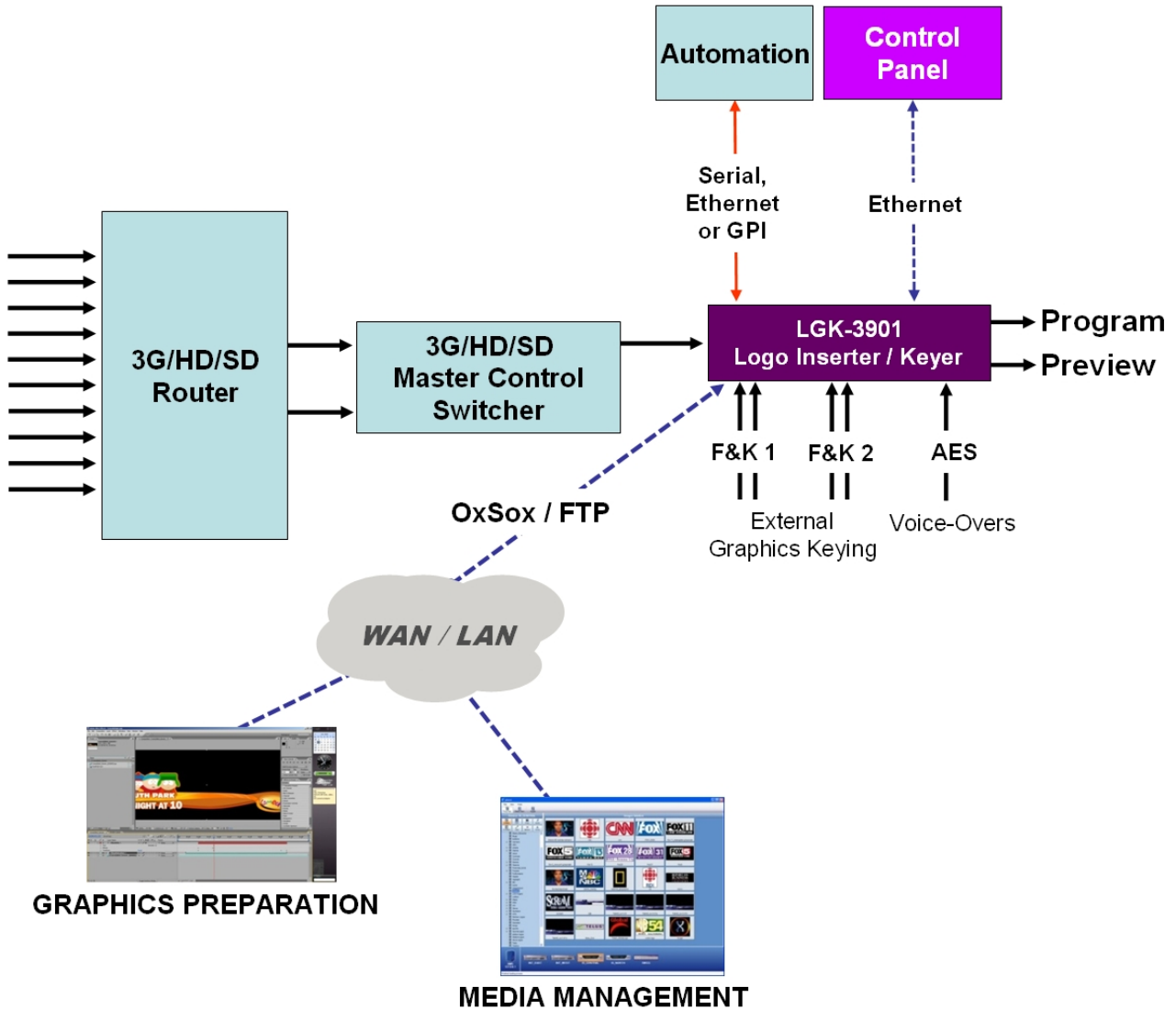
AB mixing is supported on the PGM channel (requires the DSK-3901-OPT-ABMIX option) and the PVW channel input can also be switched. Each video channel supports two keyers which may receive fill and key from two external fill and key inputs.

The integrated audio engine provides multi-channel AB mixing and voice-overs. Background audio is automatically ducked during voice-overs. Audio can be accepted as embedded SDI audio or by four external AES inputs.

3 Applications

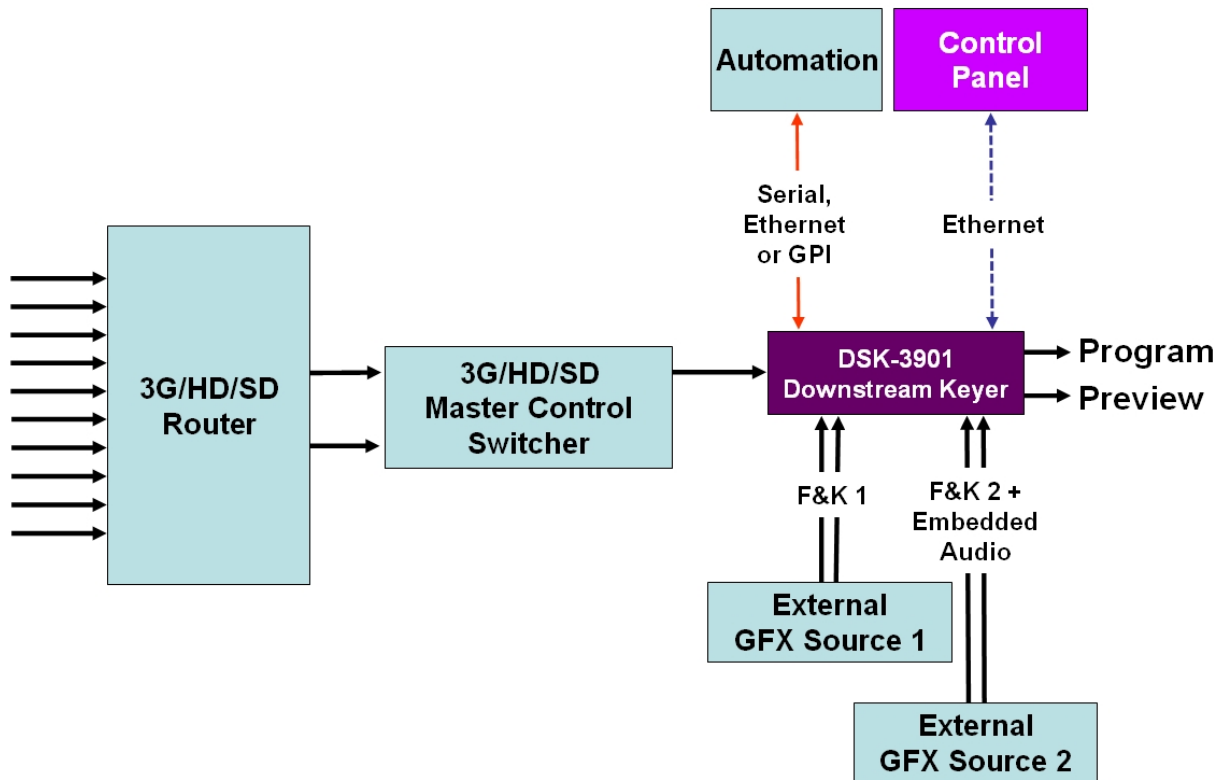
3.1 Downstream Branding

In many cases, branding is done downstream of a Master Control switcher. In this scenario an LGK-3901 may be used for basic logo insertion (station logo, ratings, etc.). Moreover, advanced graphics can be achieved using an external graphics co-processor. In this case everything is under control of automation, but an optional control panel may also be used for branding control.



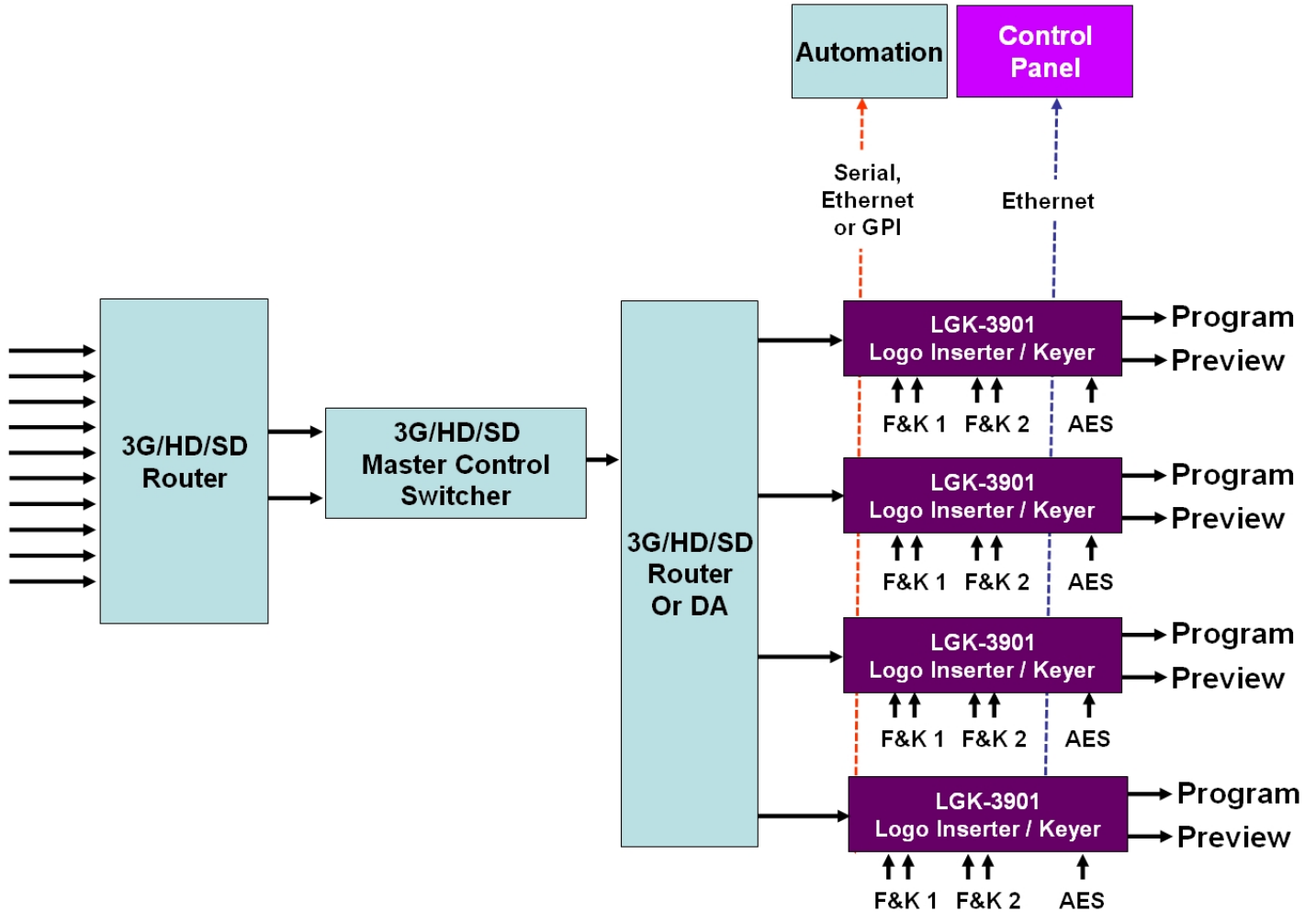
3.2 Rich Graphics Keying – (DSK-3901)

This is a variant of the Downstream Branding application but without any basic logo insertion capability. A DSK-3901 card is supplied with rich graphical content from external graphics co-processor(s). Voice-overs may be supplied via embedded audio on one of the Fill inputs, or via external AES inputs. In this case everything is under control of automation, but an optional control panel may also be used for branding control.



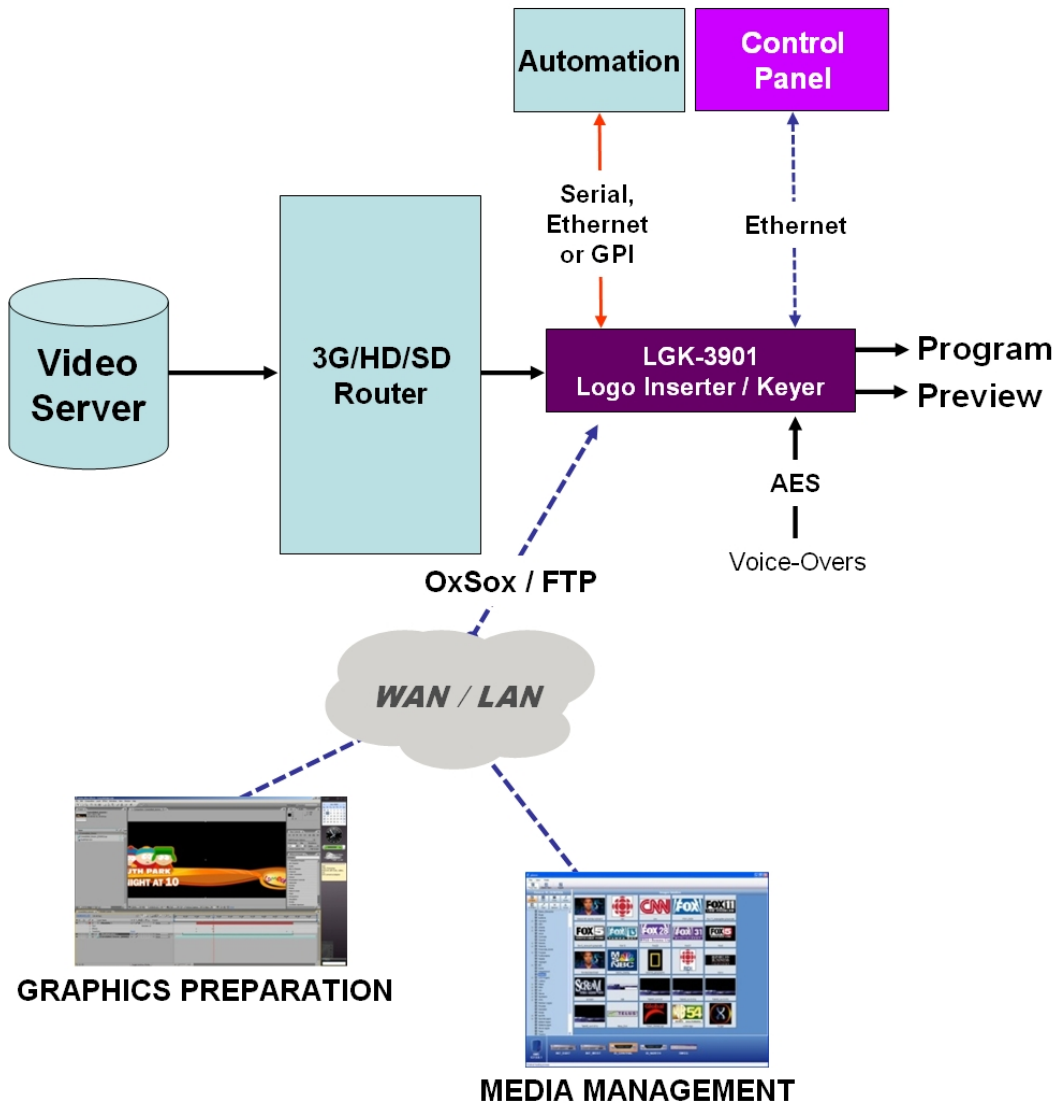
3.3 Downstream Parallel Branding

This is a variant of the LGK-3901 Downstream Branding application, where one Master Control switcher feeds several branding devices in parallel. This scenario is usually seen when the same signal has to be branded differently, for different channels or different regions.



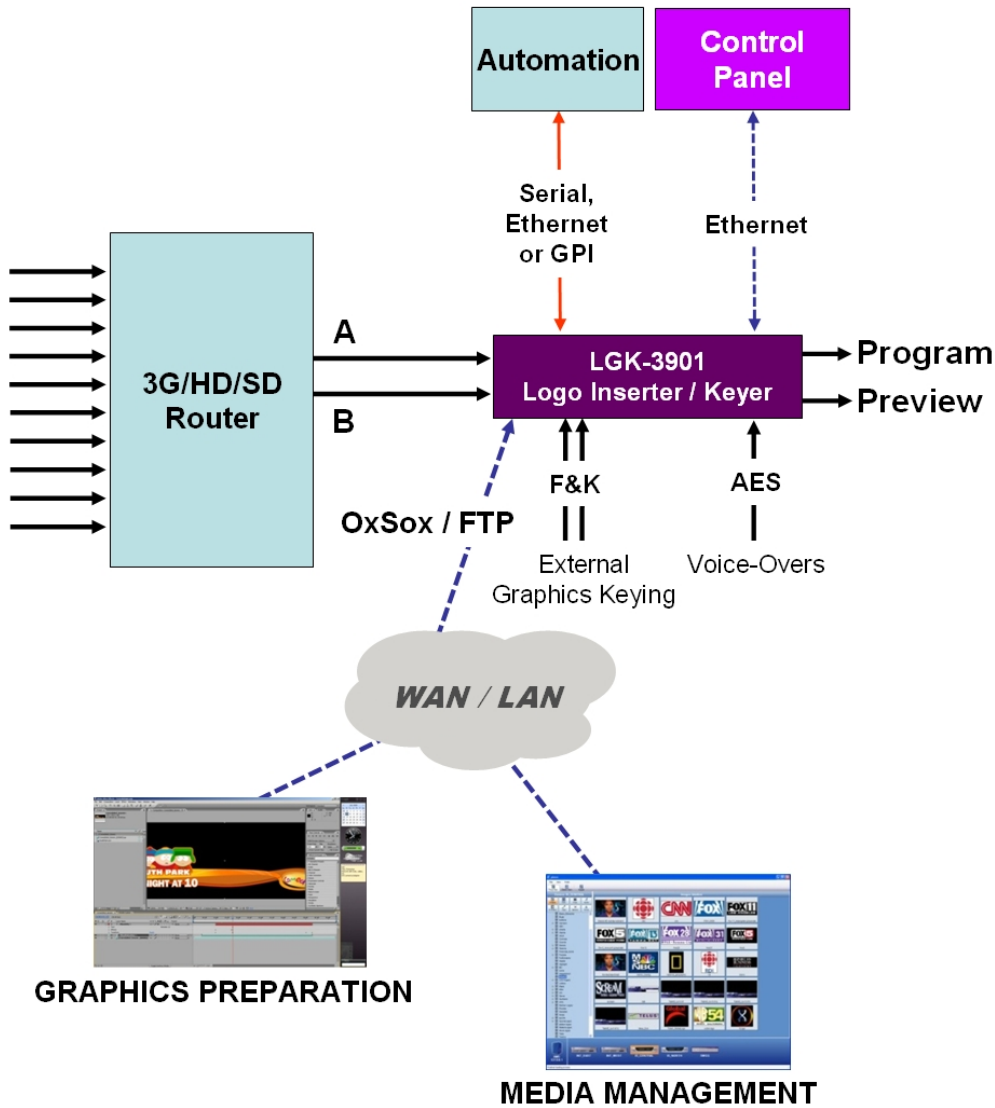
3.4 Low-Cost Channel Branding for Specialty Channels

In the case of specialty channels, a Master Control switcher may not be needed as most content is played out directly from a server. There is no need to perform transitions from a server feed to a live feed and vice-versa. For this scenario, branding can be done on an LGK-3901 directly downstream of the server playout port, and for the low-end part of the specialty channels, a simple logo inserter may be ideal.



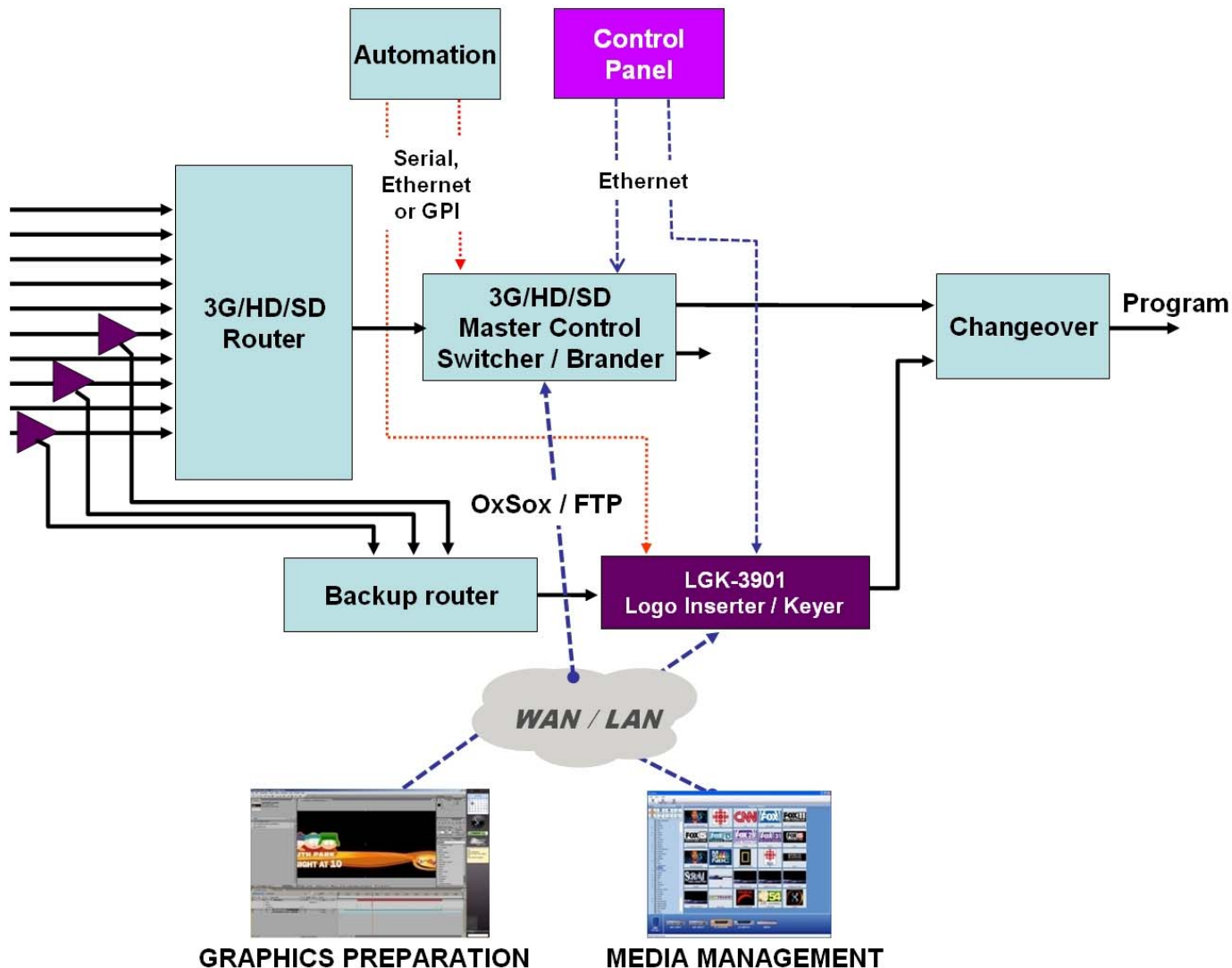
3.5 Master Control Switching

The LGK-3901 can be used as a traditional Master Control switcher, as it includes an optional AB mixer. In the case where live events need to be handled, the LGK-3901 is a compact and economic solution for stations which need a transition engine without all the features that typically burden the cost & power consumption in a traditional Master engine (Dolby decoding, DVE etc...).



3.6 Master Control Backup

In a traditional playout chain, a small utility router is typically used as a low-cost backup for the main master control path. Indeed, a small router is cheaper than a full Master Control switcher, and moreover, this configuration allows the backup path to bypass not only the Master Control switcher but also the main station router. In such scenarios, it may be useful to include a simple and low-cost logo inserter, so that the backup chain includes at least a minimum level of branding. Having the utility router and logo inserter integrated within the same frame makes this application even more attractive.



4 Features

4.1 Front Card-Edge Interface

The front card-edges of the two cards of the LGK-3901/DSK-3901 incorporate six elements.

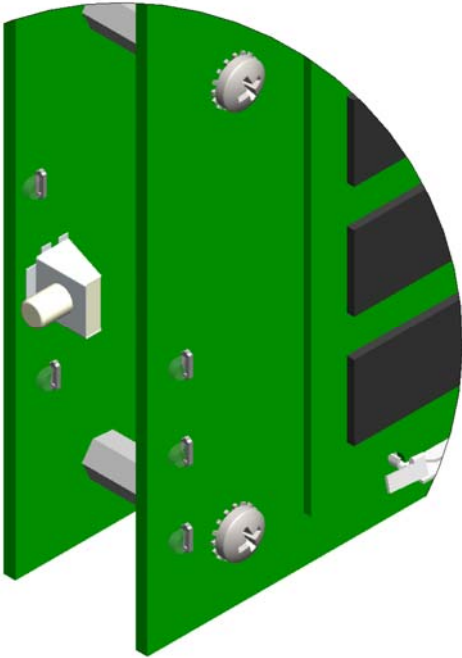


Figure 4.1 Front card-edge layout

4.1.1 CPU Card Front Edge

The CPU card is the left-hand of the two cards. Its three elements are as follows (top-to-bottom):

- Status LED
 - Multi-color LED indicating the status of the card by color, and by flashing/steady illumination.
 - Visible through the front access door of the Densité frame.
 - See section 6.2 for details of error status
- Select Button
 - Selects the card to be controlled via the local control panel
 - See section 6.3 for details of the select button
- Compact Flash Status
 - Displays activity for the Compact Flash memory

4.1.2 FPGA Card Front Edge

The FPGA card is the right-hand of the two cards. Its three elements are as follows (top-to-bottom):

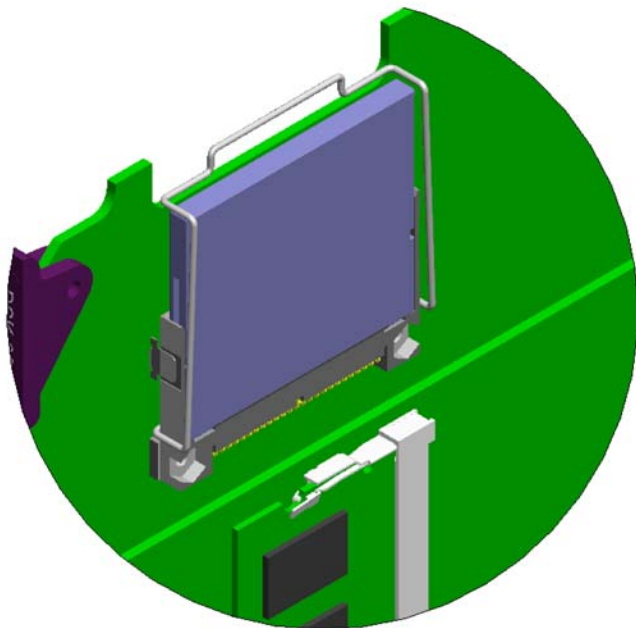
- Watchdog
 - When green, the software is active and continually writing to the hardware watchdog. PGM and PVW outputs are driven by the card, and the bypass relay on the rear panel is disabled..
 - When red, the software has failed to write to the hardware watchdog for at least one second. The bypass relay is enabled allowing PGM IN to pass directly to PGM OUT. Preview output is disabled.
 - The watchdog LED will be red during boot-up, and green during normal operation

- PGM IN Status
 - When green, the incoming video on PGM IN is valid and also matches the expected video standard
 - When red, either video is missing from PGM IN or the video standard does not match the current configuration.

- REF IN Status
 - When green, the URS reference or external reference or is present and locked.
 - When red, an external reference (URS or external) is missing, or has failed to lock

During software upgrade (see section 8.10), the three LEDs of the FPGA Card will be colored orange and cycle from top to bottom. **Note:** This indicates that it is very unsafe to remove the card from the Densité frame. Once the upgrade completes, the card will restart automatically and normal operation will be restored.

4.2 Compact Flash Memory



The Linux operating system and software are stored in Compact Flash memory. Media files are also stored in Compact Flash memory (LGK-3901 only). The memory card is removable and is physically located as shown in the accompanying diagram.

Additional Compact Flash memory cards may be purchased to provide backup replacements in the event of a failure. A backup memory card must always be pre-loaded with the correct software, configuration files and media files (LGK-3901 only). Media and other files may be backed up via the LGK-3901 Web Page (see sections 8.6 and 8.8).

Figure 4.2 Compact Flash Memory location

4.3 Video Standards

4.3.1 Output

The following SDI video standards can be transmitted:

- 525i / 59.94 Hz SMPTE 259M-1997 270Mb/s
- 625i / 50 Hz SMPTE 259M-1997 270Mb/s
- 1920 x 1080i / 59.94 Hz SMPTE 274M-1998 1.485Gb/s
- 1920 x 1080i / 50 Hz SMPTE 274M-1998 1.485Gb/s
- 1280 x 720 / 59.94 Hz SMPTE 296M-2001 1.485Gb/s
- 1280 x 720 / 50 Hz SMPTE 296M-2001 1.485Gb/s
- 1920 x 1080p / 59.94 Hz SMPTE 425M-2006 2.970Gb/s Level A / Mapping Structure 1
- 1920 x 1080p / 50 Hz SMPTE 425M-2006 2.970Gb/s Level A / Mapping Structure 1

4.3.2 Input

Further to the list of supported output video standards above, the following SDI video standards can be received.

- 1920 x 1080p / 59.94 Hz SMPTE 372M-2006 2.970Gb/s Level B Dual Link on 3G
- 1920 x 1080p / 50 Hz SMPTE 372M-2006 2.970Gb/s Level B Dual Link on 3G

The two additional 1080p input video standards are converted to “SMPTE 425M-2006 Level A / Mapping Structure 1” and output at the equivalent frame rate.

4.3.3 Propagation Delay

The video propagation delay for LGK-3901/DSK-3901 is as follows:

Video Standard	Propagation Delay
525i / 59.94 Hz	2.0 μ s
625i / 50 Hz	2.0 μ s
1920 x 1080i / 59.94 Hz	1.3 μ s
1920 x 1080i / 50 Hz	1.3 μ s
1280 x 720 / 59.94 Hz	1.3 μ s
1280 x 720 / 50 Hz	1.3 μ s
1920 x 1080p / 59.94 Hz	0.7 μ s
1920 x 1080p / 50 Hz	0.7 μ s

4.4 Reference

4.4.1 Reference Types

The LGK-3901/DSK-3901 will lock to one of the following inputs, in order of priority:

- Universal Reference Signal (URS) from a Densité REF-1801, if present and enabled
- REF IN Analogue Reference Input, if present and compatible
- PGM IN, if present and at the correct video standard
- Otherwise the card will free-run

The compatibility matrix between REF IN type and output video format is shown below:

		REF IN Type					
		525i / 59.94	625i / 50	1080i / 59.95	1080i / 50	720p / 59.94	720p / 50
Output Video Format	525i / 59.94	✱					
	625i / 50		✱				
	1080i / 59.94	✱		✱			
	1080i / 50		✱		✱		
	720p / 59.94	✱				✱	
	720p / 50		✱				✱
	1080p / 59.94	✱					
	1080p / 50		✱				

4.4.2 Adjusting Reference Timing

Note: Reference timing should always be adjusted off-air since it can result in a loss of picture in downstream equipment. Errors may occur in the SDI stream whilst the adjustment is taking place.

The reference offset can be modified via the front panel menu SETUP > REFERENCE > OFFSET in the either:

- Lines and Samples
- Lines and μ s

Use the joystick arrows [+] and [-] to increase or decrease the offset value. For any video standard the factory default reference timing is 0 lines plus half the length of a video line. This will buffer about half a video line for inputs that are timed to a reference offset of + 0 lines + 0 samples (or + 0 lines + 0 μ s).

Reference adjustment affects the line number marking of the output stream. It needs to be adjusted to match the input signal timing of the local facility. Ancillary data such as timecode, captions and audio metadata may be missed by downstream equipment if they are not present on the same line that they were input on. If the output reference timing is not set correctly then problems may be seen such as:

- Loss of timecode
- Loss of closed captions
- Errors in embedded audio
- Errors in Dolby E streams

An SDI data analyzer is needed to monitor the timing of the SDI input sources and the outputs with respect to the facility reference.

Clean switching between the inputs is made possible by buffering the inputs in-line FIFOs to co-time them before processing. The reference timing will adjust the active depth of the FIFOs to accommodate small timing differences between the input signals.

The shortest video processing delay from any input through the LGK-3901/DSK-3901 to the PGM Output occurs when the input line FIFO depth is at its minimum. By increasing the output reference timing with respect to PGM IN the FIFO depth is lengthened up to its maximum of 1 line.

4.4.3 HD-SDI Example (1080i)

Timing is dependent on the relative phase between the SDI input and the reference. The following example illustrates how to set up HD-SDI signals with a tri-level sync reference to achieve the minimum delay through the unit:

- Assume that the HD-SDI input arrives $3\mu\text{s}$ later than the associated tri level sync (+0 line + $3\mu\text{s}$)
- Assume that the minimum processing delay is about $1.3\mu\text{s}$ for HD-SDI standards
- As PGM IN is $3\mu\text{s}$ later than the tri-level sync and PGM OUT will be at least $1.3\mu\text{s}$ later than PGM IN, the minimum starting point to set the reference timing to is $1.3\mu\text{s} + (0 \text{ line} + 3\mu\text{s}) = 0 \text{ line} + 4.3 \mu\text{s}$

The reference timing must now be increased so that some data is buffered in the line FIFOs. In the example above the line FIFO is now almost empty. This is a very undesirable timing point as the FIFO is on the threshold of going from empty to full if the input timing changes slightly, resulting in a 1 line vertical shift. Furthermore, the whole video picture may show corruption precisely at the FIFO empty point.

Adding half a video line to the above reference timing will provide enough buffering to accommodate the largest timing differences when the input is switched to a source that is not correctly co-timed. Co-timed inputs will then have approximately half of a line buffered in their FIFOs. Any sources that arrive earlier or later will increase or reduce the FIFO depth respectively.

Line lengths of SDI standards are shown in the following table:

Video Standard	Line Length	Samples
525i / 59.94 Hz	63.5 μs	1716
625i / 50 Hz	64.0 μs	1728
1920 x 1080i / 59.94 Hz	29.6 μs	2200
1920 x 1080i / 50 Hz	35.5 μs	2640
1280 x 720 / 59.94 Hz	22.2 μs	1650
1280 x 720 / 50 Hz	26.7 μs	1980
1920 x 1080p / 59.94 Hz	14.8 μs	2200
1920 x 1080p / 50 Hz	17.7 μs	2640

GUIDE TO INSTALLATION AND OPERATION

To buffer half a line of 1080i / 59.94, increase the above reference timing to: 0 line +4.3 μ s (+15 μ s) = 0 line +19.3 μ s.

Note: If the path delay of the SDI input sources is such that they are all offset from reference by several lines then adjust the reference by the same number of lines to align the output to the unusual input timing. Then add 10 to 20 microseconds to give some buffering in the line FIFOs.

4.5 Audio Processing

Audio processing requires the LGK-3901-OPT-AUD or DSK-3901-OPT-AUD audio option to be enabled.

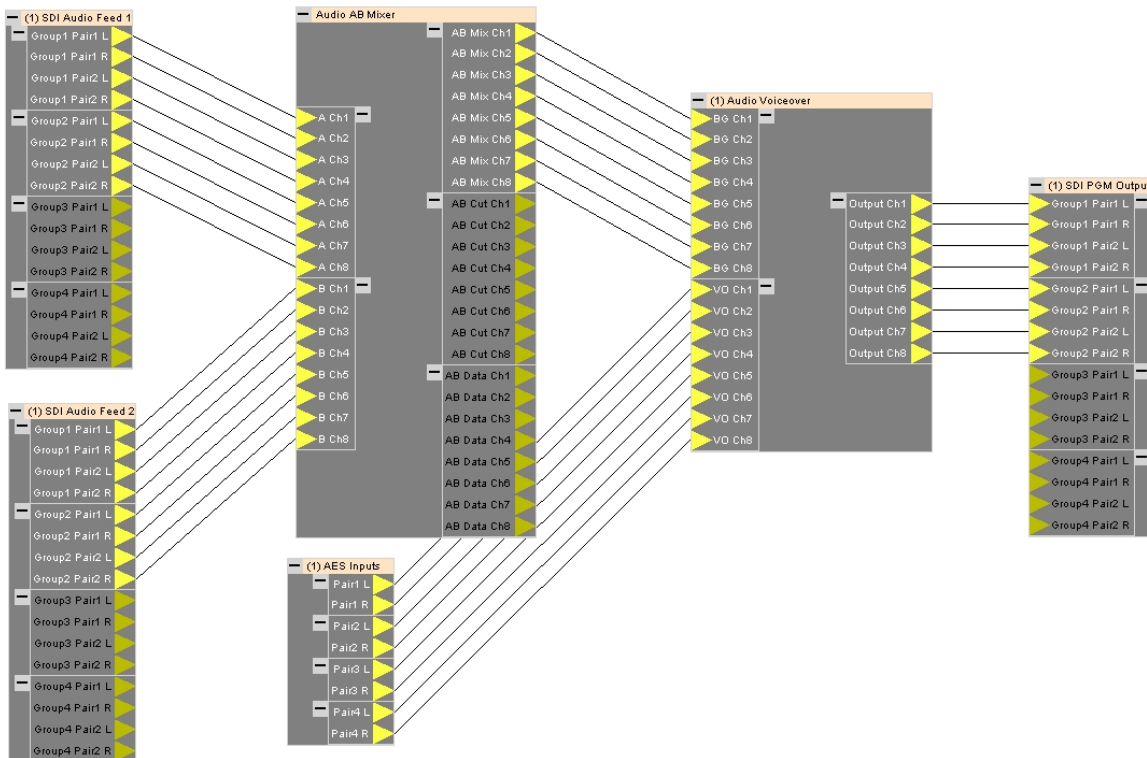
The audio engine provides the following possible features:

- Input selection from embedded SDI or external AES
- AB mixing of multi-channel audio sources for cuts and variable rate fades
- Multi-channel voice-overs from embedded SDI or external AES inputs
- Easyplay clip storage and playout of two streams sharing eight audio channels (LGK-3901 only)
- Wide shuffles and per-channel control of gain level, trim, phase and mute
- Dynamic selection of audio preview points and metering
- Fade to silence and configurable audio delays

4.5.1 Route Manager

Audio routing is set up via the Configurator Tool by dragging audio blocks onto the Audio Route Manager view and connecting up appropriate pins between input and output blocks.

In the simple example shown below the first 8 channels of two embedded SDI feeds are being AB mixed together. An AES voice-over is then applied before audio is output to SDI PGM OUT. This example does not incorporate typical control blocks for features such as input gain, input shuffling, fade to silence, output gain, preview and meter multiplexing or meters.



Please see section 7.4 for more details of the various audio blocks which are available for LGK-3901/DSK-3901.

Some audio blocks are controlled by automation, and others may be set up to automatically follow other system states; for example audio AB mixing may follow video AB mixing and Easyplay clips may drive voice-overs and/or follow the up/down state of keying layers on Program or Preview.

Note: When the audio option is disabled, the audio embedded within the source SDI video is generally passed through the system completely unmodified. During AB mixing of video, audio will be cut between the input sources (rather than faded). It is possible to insert a stereo voice-over if the LGK-3901-OPT-EAS option is enabled without LGK-3901-OPT-AUD but this limited use-case is the only exception that allows audio mixing without the audio option.

4.5.2 Example Route Manager Templates

A range of different example Route Manager templates are provided for building custom audio setups within the Configurator Tool.

- 16 channel embedded AB mix
- 16 channel embedded AB mix with 2 channel AES voiceover (EAS)
- 16 channel embedded AB mix with 8 channel AES voiceover
- 16 channel embedded pass-through with 2 channel AES voiceover (EAS)
- 16 channel embedded pass-through with 8 channel AES voiceover

Within the LGK-3901/DSK-3910 Web Page (see section 8.7) each example is described listing the following details:

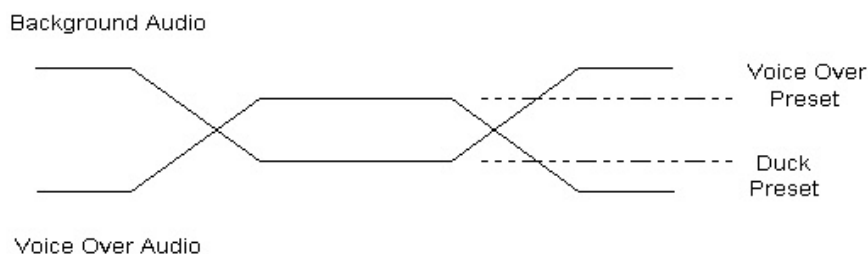
- Functional description
- Inputs
- Outputs
- Preview Modes
- Metering

To build upon an example template, select the appropriate filename from the following Configuration Tool menu:

- File > Import Router Settings > From Device Template

4.5.3 Voice-overs

Voice-overs are used to adjust the combined levels of the background audio and incoming voice-over so as not to exceed the original background volume. The diagram shows how Duck and Preset adjust the actual audio levels.



Voice Over Diagram

The Duck value sets the amount by which the background audio level is attenuated when the voice-over is fully on. The Preset value sets the level of the voice-over audio when the voice-over is fully on. Both values are measured in decibels.

Up to 8 independent voice-overs may be defined via the Configurator Tool Route Manager (see section 7.4.2).

4.5.4 Easyplay

Note: Easyplay audio clip payout requires version 3.1 software or above and is only supported by LGK-3901.

The Easyplay feature allows digital audio clip storage and payout of up to two independent streams sharing a total of eight audio channels. This allows for a range of possible cases including:

- 8 channels One stream playing out wide audio clips
- stereo + 5.1 Two streams of the same language with different widths
- 2 x stereo Two streams of different language under independent control

Easyplay audio clips are typically associated with one of the 8 available voice-overs. The associated voice-over is then automatically faded up when the Easyplay stream starts playing, and automatically faded down when the Easyplay stream stops.

Easyplay may be set up to automatically follow corresponding video layers cuts, fades, loads and unloads. In this mode, audio clips are loaded by association with image filenames, and audio clips will play out (or stop) automatically when an associated keyer is cut up (or down). Association may be made with either Program or Preview keyers.

The following Easyplay audio clip file formats are supported:

- OXW 2 channel clips created by AudioBuilder (available from the MCS CD)
- WAV Multi-channel WAV files (preferred)

All audio clips must be generated at 48 KHz (samples/second). WAV files may be generated with 16 bits or 24 bits (preferred) per sample.

4.6 Video AB Mixing

Video AB mixing requires the AB mixing option (LGK-3901-OPT-ABMIX or DSK-3901-OPT-ABMIX).

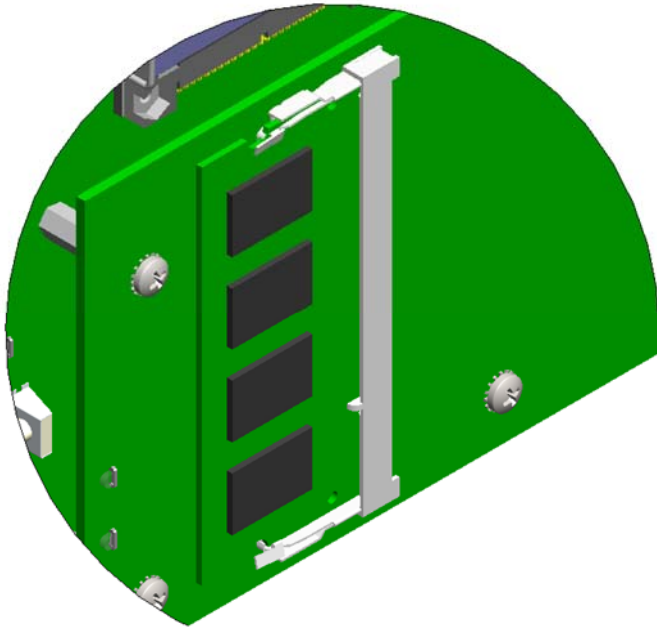
The integrated video AB mixer allows video from two SDI inputs (PGM IN and FILL-2) to be mixed together. The resulting mix provides the background video source for the PGM keyers, as shown in the functional block diagrams on pages 3 and 6. The mixer may be dynamically configured to either cut or fade the video. Cross-fades and V-fades are supported over variable durations, with V-fades transitioning through a predefined color field. V-fades may be performed asymmetrically for “cut-fade” or “fade-cut” transitions.

Audio AB mixing requires the video AB mixing option plus the audio option (LGK-3901-OPT-AUD or DSK-3901-OPT-AUD). The audio mix may be configured to automatically follow the video mix (SETUP > AUDIO SETUP > FOLLOW VIDEO > A/B MIX), or can alternatively be controlled completely independently from the video.

4.7 Store Memory

Store memory applies only to the LGK-3901.

The main difference between DSK-3901 and LGK-3901 hardware is the store memory that is fitted to the LGK-3901.



The store memory is physically located as shown in the accompanying diagram. DSK-3901 may be upgraded to LGK-3901 by the addition of store memory and appropriate options, both purchasable from Miranda Technologies Inc (see section 9.2.3).

Figure 4.3 Store Memory location

Media files are always pre-loaded into the store memory prior to being keyed over background video. Each of the three stores supported by LGK-3901 is assigned to one of the five available keying layers. The store-to-keyer assignment is dynamically adjustable via the front panel (SETUP > STORES > STORES CONFIG) and its default state following restart may be set via the Configurator tool (see section 7).

The 2GB of available store memory is split between the three stores, with the size of each store adjustable depending on user requirements via the front panel (SETUP > STORES > STORES MEMORY). For example, the bulk of available store memory may be required for a very large animation with much less store memory available for two still images.

Stored images/animations can be taken to air by fade or cut transitions. An automation pre-load capability (R7) allows the next animation to be loaded in advance, even while other animations are on-air, to avoid playout delays on-air.

4.8 Keying Graphics

Keying is the process of inserting one video signal (the Fill signal) into another video signal (the Background signal) according to a third signal (the Key signal).

Graphics fill/key signals may be sourced from the following methods:

- External graphics device fed into a Fill/Key input BNC (LGK-3901/DSK-3901)
- Internal media files loaded into Store Memory (see section 4.7) (LGK-3901 only)

The following keying parameters may be adjusted for both of these methods:

- Source (section 4.8.5.1)
- Clip, Gain and Transparency (section 4.8.5.2)
- Type (section 4.8.5.3)
- Sense (section 4.8.5.4)
- Masking (section 4.8.5.5)

4.8.1 External Graphics

An external graphics device or CG may be connected to Fill-1/Key-1 or Fill-2/Key-2 inputs (see sections 5.4.2 and 5.4.3). These signals may then be fed to any of the supported keying layers (five layers for LGK-3901; two layers for DSK-3901) and keyed up or down as required.

Section 4.8.5 describes the different keying parameters that may be used for external graphics.

4.8.2 Internal Media

Internal media only applies to LGK-3901.

The following styles of internal image file may be cut or faded onto any keying layer with an associated store:

- Images OXT
- Animations OXA
- Easytext OXA
- Bugclock OXA

Section 4.8.5 describes the different keying parameters that may be used for internal graphics.

4.8.2.1 Images

Logos and full-frame still images are defined within OXT image files. The image file embeds information such as the on-screen position, keying source (see section 4.8.5.1) and keying type (see section 4.8.5.3). The transparency may be defined via a key image, and so effects such as soft edges can be easily applied.

OXT image files may be generated using one of the following applications:

- Xplorer
- Animation Builder (available from the MCS CD)

4.8.2.2 Animations

Cell animations for complex dynamic graphics branding are defined within OXA animation files. The animation file embeds information such as the on-screen position (for each field/frame of the animation if necessary), keying source (see section 4.8.5.1) and keying type (see section 4.8.5.3). The transparency of each frame may be defined via a sequence of key images, and so effects such as soft edges and dynamic fades can be easily applied. Any of the following loop modes may also be defined:

- Single Shot
- Cycle
- In-Loop-Out
- Linear Control
- Ping-Pong
- Multi-Loop

The maximum length of a cell animation is limited by the available store memory in combination with the screen area of the animation. The store load time depends on the total size of the animation file.

OXA animation files may be generated using one of the following applications:

- Xplorer
- Animation Builder (available from the MCS CD)
- Miranda Adobe After Effects¹ Plug-in (available from the MCS CD)

4.8.2.3 Easytext

Easytext requires the LGK-3901-OPT-TXT option.

CG text effects including static text and simple crawls are defined within OXA Easytext files, or templates. These templates may comprise of many text and/or image elements, all of which may be updated dynamically via automation. Datasources may also be defined within text elements to help achieve dynamic data-driven updates, including timer, date, stopwatch, countdown and custom data.

OXA Easytext files may be generated using one of the following applications:

- XStudioLT
- TextBuilder2 (available from the MCS CD)

4.8.2.4 Bugclocks

Bugclocks require the LGK-3901-OPT-TXT option.

Analog or digital clocks are defined within OXA Bugclock files. The Bugclock file defines the properties of the clock, such as hand and face styles, whether it shows hours, minutes and seconds. Digital clocks may be 12 or 24 hour style.

OXA Bugclock files may be generated using the Clock Builder application (available from the MCS CD)

¹ After Effects is a digital motion graphics and compositing software package published by Adobe Systems. Its main purpose is for film and video post-production.

4.8.2.5 Emergency To Air

In the event of background video failure an emergency image message can be brought to air using the Emergency To Air feature. This may be triggered from automation (see Oxtel Automation Protocol v15), GPI, control panel (such as the Miranda RCP-BR) or the front panel.

When Emergency To Air is selected, the most downstream keyer that is associated with a store (on the program output channel) is faded down over 25 fields. Image V000.oxt is then loaded and faded up over a further 25 fields.

When Emergency From Air is selected, the most downstream keyer that is associated with a store (on the program output channel) is faded down over 25 fields and the previous image is restored, but not faded up.

Note: The emergency image must be stored in the image library under filename V000.oxt.

4.8.3 Emergency Alert System (EAS)

The Emergency Alert System feature requires the LGK-3901-OPT-EAS option.

The Emergency Alert System (EAS) is a national warning system in the United States used to notify the general public of pending or imminent situations such as weather emergencies. It can also be used by the President of the United States to deliver a message. All television stations in the USA are required to transmit EAS messages. Cable head-ends are also required to transmit EAS messages on all programmed channels. For more information on EAS, see the FCC website or the websites of the EAS receiver manufacturers.

A televised EAS alert consists of two components:

- An on-screen crawl displaying the nature of the emergency and the regions affected in the broadcast area
- An audio message up to two minutes in length

The EAS option provides a mechanism for the LGK-3901 to receive information from an external EAS receiver and then generate the required video crawl and audio voiceover. The LGK-3901 provides flexible branding capabilities for the video crawl via an Easytext template (adjustable font type/size/color, additional images, text, etc), full GPI macro programmability and enforces keyer control so that the crawl is shown for the duration of the alert.

4.8.3.1 EAS Receivers and Interfacing

The following EAS receivers are supported:

- Sage ENDEC Model 1822
- TFT EAS 911

The EAS receiver model and baud rate are selected via the Configurator Tool or front panel (SETUP > SERIAL COMMS > SERIAL PORTS > COM x > PROTOCOL / BAUD RATE).

The following external interfaces to the LGK-3901 are required:

Serial Input

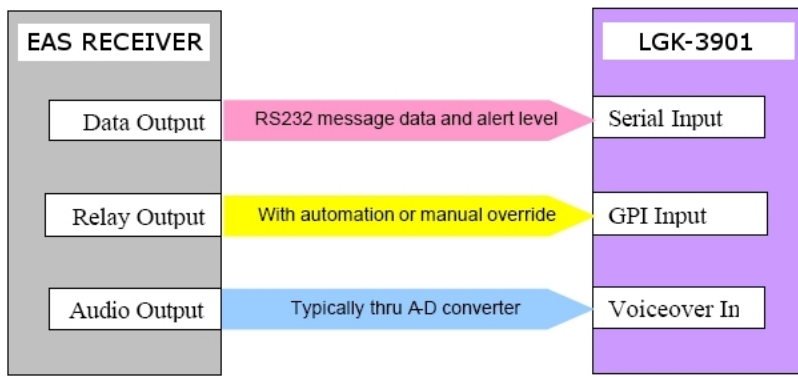
- The EAS receiver connects to the LGK-3901 over an RS232 serial connection.
- This connection provides the EAS alert data including alert level and crawl text data.
- EAS messages can be up to 1990 characters long.

GPI Input

- A GPI trigger on the LGK-3901 is used to initiate and then terminate the EAS alert.
- This GPI may come directly from the EAS receiver, automation or a manually initiated trigger.
- The GPI trigger drives separate ‘EAS On’ and ‘EAS Off’ macros that allow the user to build a custom branding event around the EAS crawl. The macro usually includes triggering of an AES voiceover (which will duck the background audio) but may play a pre-recorded Easyplay audio clip instead.

Voiceover Input

- Audio voiceover input is fed into an external AES pair on the LGK-3901.
- The EAS audio message is up to two minutes duration and stored in the receiver until the alert is triggered.
- Since most receivers have analogue audio outputs, the audio will first need to be converted to AES using an external converter such as the Miranda ADC-1711 or ASD-771p.
- The AES audio is then fed to the LGK-3901 via an external AES input pair and the audio is mixed onto the background via a voiceover.



4.8.3.2 EAS Crawl Templates

LGK-3901 monitors its COM ports for a serial string received from an EAS receiver. When a message is received its priority (high, medium, low or none) is established and the text is updated in one of the following default Easytext crawl templates. For each video standard there are a standard set of files that correspond to the appropriate alert level for the EAS alert with appropriate background color.

Filename	Priority	Video Standards
EASHigh.oxa	1 (high)	525i / 59.94, 625i / 50
EASHighHD1080.oxa	1 (high)	1080i / 59.94, 1080i / 50, 1080p / 59.94, 1080p / 50,
EASHighHD720.oxa	1 (high)	720p / 59.94, 720p / 50
EASMed.oxa	2 (medium)	525i / 59.94, 625i / 50
EASMedHD1080.oxa	2 (medium)	1080i / 59.94, 1080i / 50, 1080p / 59.94, 1080p / 50,
EASMedHD720.oxa	2 (medium)	720p / 59.94, 720p / 50
EASLow.oxa	3 (low)	525i / 59.94, 625i / 50
EASLowHD1080.oxa	3 (low)	1080i / 59.94, 1080i / 50, 1080p / 59.94, 1080p / 50,
EASLowHD720.oxa	3 (low)	720p / 59.94, 720p / 50
EASNone.oxa	None	525i / 59.94, 625i / 50

EASNoneHD1080.oxa	None	1080i / 59.94, 1080i / 50, 1080p / 59.94, 1080p / 50,
EASNoneHD720.oxa	None	720p / 59.94, 720p / 50

Each default EAS template file can be copied (from /etc/eas/ into /home/images/) and then modified to suit requirements via the TextBuilder application (available from the Media Conversion Suite (MCS) CD that ships with LGK-3901/DSK-3901). Background color, crawl speed, font, size, shadow, and positioning are all customizable. Additional elements may also be added to the crawl such as another text field or logo/graphical element.

Note the following considerations relating to EAS template files:

- The EAS template filename should not be changed. If it is then the EAS option will not find the template.
- Always use TextBuilder or IMM to transfer modified files to the LGK-3901 so that all fonts associated with the template are also transferred.
- The datasource name "EAS_TEXT" is associated with the text crawl element in an EAS template. Ensure that its datasource value is not inadvertently adjusted via automation since it may affect the EAS message on-air.
- If no text has been received from the EAS receiver blank text will be seen in the EAS template. Either leave this blank, or pre-set the data-source to something harmless such as "Stand by for an important EAS alert"

4.8.3.3 EAS Triggering

Note: EAS messages are displayed on-air following appropriate GPI triggers or automation commands. To set the relevant GPI refer to section 4.10. For automation commands refer to the Oxtel Series Automation Protocol manual.

When an EAS alert on LGK-3901 is triggered 'on' by GPI or automation, the following internal events occur:

- The EAS option determines the 'EAS Layer' (DSK3, DSK4 or DSK5) which is the most downstream keyer that has an associated store – (this is configured via SETUP > STORES > STORES CONFIG)
- The 'EAS Layer' is cut down. Its prior keyer state plus the image loaded (if any) are recorded for later use.
- Any layers downstream of the 'EAS Layer' are also cut down and their previous keyer state recorded for later.
- The appropriate EAS crawl template is loaded into the 'EAS Layer'. The selected crawl file is determined by the alert level in the crawl data and the video standard. The crawl data must be received before the EAS alert is initiated, otherwise stale data will be displayed.
- The 'EAS Layer' is cut up to reveal the EAS alert (in the video foreground).

When an EAS alert is triggered 'off' by GPI or automation, the following internal events occur:

- The current EAS crawl will complete after which the 'EAS Layer' cuts down.
- The previous image (if any) is reloaded into the 'EAS Layer'.
- The 'EAS Layer' plus any layers downstream of it are restored back to their prior cut states.
- Any remaining events in the EAS alert 'off' GPI macro will be processed. These macro events are suspended until the above events complete.

Additional commands can be added to the GPI macros to provide other EAS actions. At a minimum, these events must include a 'Voiceover On' and 'Voiceover Off' command and appropriate delays to ensure that the data for the crawl is received. Such GPI macros are outside the scope of this manual, but can be discussed with Miranda Support.

As the LGK-3901 retains the last EAS text message received, the EASNone.oxa crawl will only be seen when the EAS mode is activated with no alert level.

4.8.4 Temperature Probe

The Temperature Probe feature requires the LGK-3901-OPT-TEMP option.

This option provides a low cost temperature sensor (Sensorsoft ST6154J) for measuring the local temperature, typically from the roof of the building. The temperature is recorded in Celsius or Fahrenheit, and can be displayed (and continually updated) on a keying layer of the LGK-3901 via an Easytext template.

The thermometer connects via cable to an RS232 serial port on the LGK-3901 and can be located up to a thousand feet away without the need for a battery or external power adapter. It has an external stainless steel probe for outdoor applications or where liquids are present.

4.8.4.1 Temperature Probe Parts

Miranda Part Number	Description
4100-0041-0	Sensorsoft ST6154J RS232 Temperature Sensor with External Probe
3503-0024-0	Sensorsoft C2000 Cable, DB9-to-RJ45, 20 feet
1897-1700-100	Miranda Adapter, RJ45-to-DE-9 for RS232 DTE
0702-1400-100	Ethernet Cable, RJ45-to-RJ45 CAT5 UTP, Flex 10 feet

Note: For pin-outs to be correct at the LGK-3901, parts must be connected in the order listed in the table above.

4.8.4.2 Temperature Probe Serial Port Settings

The serial port protocol and baud rate must be set to the following values via the front panel or Configurator Tool:

- Protocol ST61XX Temp Sens
- Baud Rate 1200

4.8.4.3 Temperature Probe Easytext Templates

When the Easytext option (LGK-3901-OPT-TXT) is also enabled, the special Temperature Probe datasource names (shown in the table below) may be used for text boxes within any Easytext template used on the system. When the Easytext option is not enabled, a special template name “temperature.oxa” is reserved for displaying the special Temperature Probe datasources. This is the only Easytext file that can be displayed on such a system.

Temperature Probe Datasource Name	Displays	Accuracy
TEMPERATURE_CELSIUS	Celsius	Rounds to nearest integer
TEMPERATURE_CELSIUS_TENTHS	Celsius	One decimal place
TEMPERATURE_FAHRENHEIT	Fahrenheit	Rounds to nearest integer
TEMPERATURE_FAHRENHEIT_TENTHS	Fahrenheit	One decimal place

Once an Easytext template has been generated containing one or more of the Temperature Probe datasource names, then this can be loaded into a keying layer and cut up to display the temperature on-air.

4.8.5 Keying Parameters

The following Keying Parameters may be adjusted for both internal graphics (LGK-3901 only) and external graphics (LGK-3901/DSK-3901).

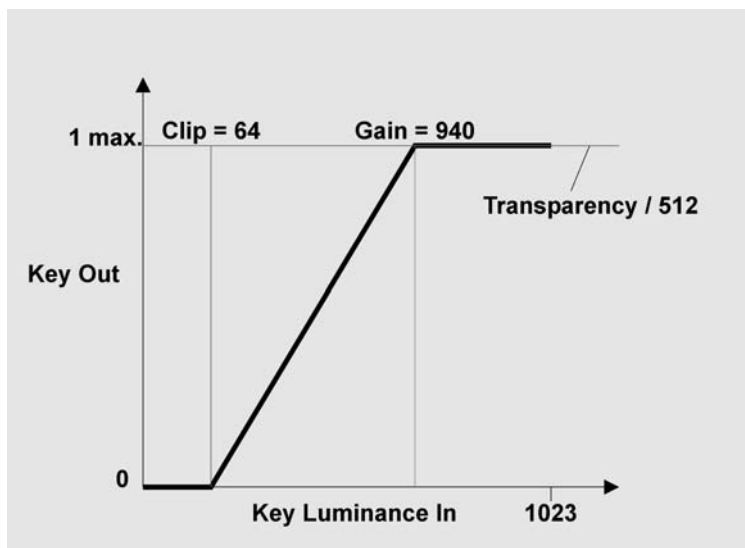
4.8.5.1 Source

The Key source may be chosen from the following:

- **Separate Key** The key data is derived from the luminance content (Y value) of the separate Key.
- **Self Key** The key data is derived from the luminance content (Y value) of the Fill signal itself.
- **None** The key for an image is set to white so that there is no image transparency.

4.8.5.2 Clip, Gain and Transparency

Once the Key Source is selected, the Key signal is processed with Clip, Gain and Transparency to alter the mapping between Key input luminance to Key output values. Transparency modifies the maximum key value as follows:



4.8.5.3 Type

Once the Key Output is generated, the Type controls the combining of the Background and Fill video signals. The LGK-3901/DSK-3901 supports both Linear and Full keying types.

Linear keying is used where the Fill signal has been pre-computed to match the Key signal. In this case, the Fill has already been cut by its own key external to the LGK-3901/DSK-3901. The card computes $(1 - \text{Key})$ and uses this to "cut a hole" in the Background signal. The Fill is then simply added to this.

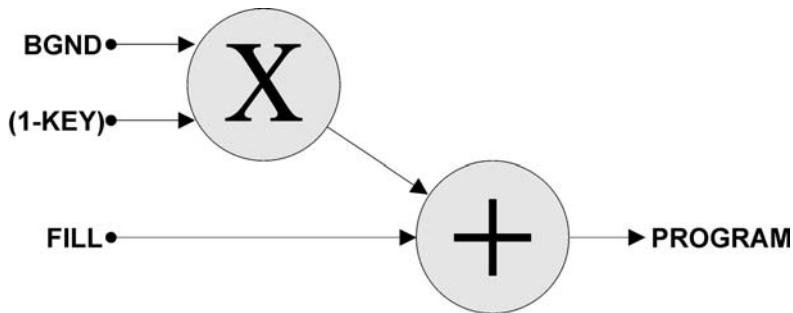


Figure 4.4 Linear Keying

Full keying is where the Fill signal needs to be multiplied by the Key signal prior to being added to the modified Background signal. In this case, the Fill has not already been cut by its key external to the LGK-3901/DSK-3901. The card cuts a hole in the Fill with the Key and then cuts a hole in the Background with a computed (1 - Key) signal. The cut Fill and cut Background are then added together.

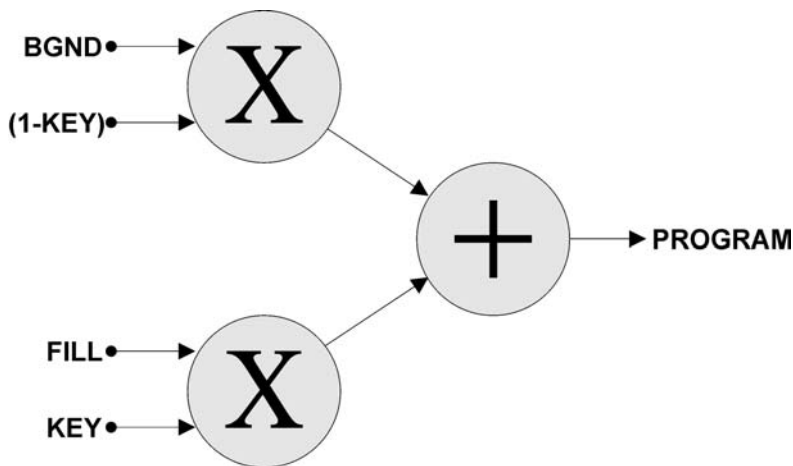


Figure 4.5 Full Keying

Key invert replaces the Key output with (1 - Key), thereby inverting the action of the Key.

4.8.5.4 Sense

The LGK-3901/DSK-3901 supports Normal and Invert Sense.

- Normal
 - Black-level key signal causes Fill image to be fully transparent so it will not appear over a background
 - White-level key signal causes Fill image to be opaque with no background appearing through it
 - Intermediate keying levels produce a pro-rata transparency effect
- Invert
 - Reverses the effect seen with Normal Sense
 - White-level key signal causes Fill image to be fully transparent so it will not appear over a background
 - Black-level key signal causes Fill image to be opaque with no background appearing through it
 - Intermediate keying levels produce a pro-rata transparency effect

4.8.5.5 Masking

The LGK-3901/DSK-3901 allows a rectangular masking area to be defined for each of the five keyers. This mask applies to any signals fed into the keyer; external fill/key signals, or the output from internal stores (LGK-3901 only).

For internal images (LGK-3901 only), the area range of the mask is determined by the width and height of the image in pixels, and is limited by the selected video standard. To maintain correct YUV values the pixel count will increment in units of 2.

For external fill/key signals the area range of the mask is limited by the selected video standard. Again the pixel count will increment in units of 2.

One situation where masking external fill/key is useful is when output from an external graphics device needs to be split between two keying layers in different regions of screen area.

4.9 Preview Channel

The LGK-3901/DSK-3901 Preview Channel is used typically for previewing graphics and audio voice-overs prior to bringing them to air on the Program Channel, but can also monitor a range of different video and audio signal paths throughout the video chain.

The video output that is seen on PVW OUT depends on the following settings:

- Preview Input / Mix B Input
- Preview Output

4.9.1 Preview Input / Mix B Input

Which of these settings is available to the user depends on the presence of the AB mixer option:

- Preview Input No AB mixer option present
- Mix B Input LGK-3901-OPT-ABMIX or DSK-3901-OPT-ABMIX is present

The Preview Input / Mix B Input selection determines the background signal to be used for the Preview Channel. It may be set to one of the following values via the front panel menu OPERATE > PREVIEW INPUT or OPERATE > MIX B INPUT:

- PGM IN Input is taken from PGM IN SDI (or associated color field / test pattern)
- FILL-2 Input is taken from FILL-2 SDI (or associated color field / test pattern)

The Preview Channel keying layers (see sections 1.3 and 2.3) are then used to overlay graphics onto the background signal (see sections 1.3 and 2.3). The resulting output will be seen at PVW OUT provided that OPERATE > PREVIEW OUTPUT is set to PREVIEW O/P.

4.9.2 Preview Output

The Preview Output selection defines the SDI output to be viewed at PVW OUT. It may be set to one of the following values via the front panel menu OPERATE > PREVIEW OUTPUT:

Selection	Description	LGK-3901	DSK-3901
PREVIEW O/P	Selects default Preview Output (see PREVIEW INPUT)	✱	✱
PROGRAM O/P	Selects a copy of PGM OUT as the Preview Output	✱	✱
PGM AB MIX	Selects output from PGM AB Mixer as the Preview Output	✱	✱
PGM DSK1 O/P	Selects output from PGM DSK1 as the Preview Output	✱	✱
PGM DSK2 O/P	Selects output from PGM DSK2 as the Preview Output	✱	
PGM DSK3 O/P	Selects output from PGM DSK3 as the Preview Output	✱	
PGM DSK4 O/P	Selects output from PGM DSK4 as the Preview Output	✱	
SDI PGM IN	Selects a copy of SDI PGM IN as the Preview Output	✱	✱
SDI FILL-1	Selects a copy of SDI FILL-1 as the Preview Output	✱	✱
SDI KEY-1	Selects a copy of SDI KEY-1 as the Preview Output	✱	✱

SDI FILL-2	Selects a copy of SDI FILL-2 as the Preview Output	☒	☒
SDI KEY-2	Selects a copy of SDI KEY-2 as the Preview Output	☒	☒
STORE 1 FILL	Selects the fill signal of Store 1 as the Preview Output	☒	
STORE 1 KEY	Selects the key signal of Store 1 as the Preview Output	☒	
STORE 2 FILL	Selects the fill signal of Store 2 as the Preview Output	☒	
STORE 2 KEY	Selects the key signal of Store 2 as the Preview Output	☒	
STORE 3 FILL	Selects the fill signal of Store 3 as the Preview Output	☒	
STORE 3 KEY	Selects the key signal of Store 3 as the Preview Output	☒	

4.9.3 Active Preview

When LGK-3901/DSK-3901 is controlled via Miranda RCP-BR, Xpanel or iControl, keyers may be armed for cuts or fades. When enabled the Active Preview feature allows the keyers on the Preview chain to change state during an arm to show the keyer state that will occur on the next “Take” command. When disabled, the Preview keyers are controlled independently of the keyer arm state.

This option is set via the SETUP > MISCELLANEOUS > ACTIVE PREVIEW option.

4.10 General Purpose Interface (GPI)

Dedicated General Purpose Interface (GPI) ports can be used either to trigger the execution of a series of internal pre-programmed commands (input) or to monitor the status of the LGK-3901/DSK-3901 (output).

The GPI ports are identified as follows (see section 5.4.10):

- Inputs: GPI_IN_0 through GPI_IN_7
- Outputs: GPI_OUT_0 through GPI_OUT_7

Note: GPI numbering is zero-based for pin-outs, automation and the front panel

GPI input ports can be used to execute a series of internal pre-programmed commands, or GPI ON/OFF macros. GPI output ports are themselves triggered either on or off via a pre-defined transition state defined for the LGK-3901/DSK-3901. Sections 4.10.1 and 4.10.2 describe how GPI inputs and outputs are configured.

GPI input ports may be wired to corresponding GPI output ports on the Terminal Block Adaptors (see section 5.5) if GPI macros need to be driven from GPI Output events.

4.10.1 GPI Inputs and Macros

Any GPI Input may have two macros associated with the GPI port transitioning on or off. Each macro may contain up to 2K bytes of Oxtel command data (approximately 200 commands strings). When triggered, the commands within the macro are executed sequentially. Pauses may be defined within the macro if required.

To create a GPI macro from the front panel:

- Select the appropriate GPI Input event
- SETUP > GPI > GPI INPUTS > GPI IN x ON or SETUP > GPI > GPI INPUTS > GPI IN x OFF
- Here “x” represents the GPI number from 0 to 7
- ON macros are triggered when the appropriate GPI input is triggered on
- OFF macros are triggered when the appropriate GPI input is triggered off
- Press [SELECT] to enter the macro editor
- If the GPI is unused > EMPTY < will be displayed
- Press [SELECT] again to access the OPERATE sub-menus
- Use the joystick arrows [+] and [-] to locate the first command to be added to the macro and press [SELECT]
- The front panel display returns to the macro list. One command is listed at this time

To add a second command to the GPI macro:

- Press [SELECT] and select whether to INSERT BEFORE or INSERT AFTER the selected command
- Press [SELECT] again to access the OPERATE sub-menus
- Use the joystick arrows [+] and [-] to locate the next command to be added to the macro and press [SELECT]
- The front panel display returns to the macro list. Two commands are listed at this time

To add subsequent commands to the GPI macro:

- Use the joystick arrows [+] and [-] to select the list position to which the next command should be adjacent
- Press [SELECT] and select whether to INSERT BEFORE or INSERT AFTER the selected command
- Press [SELECT] again to access the OPERATE sub-menus
- Use the joystick arrows [+] and [-] to locate the next command to be added to the macro and press [SELECT]
- The front panel display returns to the macro list

Repeat the above process until the required macro list is completely defined. Delays may be added via the menu MISCELLANEOUS > GPI DELAY, and these are defined in fields (interlaced) or frames (progressive).

To delete a command from the GPI macro:

- Use the joystick arrows [+] and [-] to select the command to delete
- Press [SELECT] and then select DELETE
- Press [SELECT] again to return to the macro list. The command selected will be removed from the list

The appropriate macro is activated either when the connection is made (GPI On), or when it is switched off (GPI Off) relative to a ground pin on the 44-way D type connector.

The GPI input macros defined for a system are stored in /home/params/gpi.xml

4.10.2 GPI Outputs and Events

A GPI output port can be used as an output to trigger any external device based on the occurrence of an event within the LGK-3901/DSK-3901 card. The active status (on) is defined by the output being internally pulled to ground.

The events that trigger GPI outputs on or off are configured via the front panel menu:

- Select the GPI Output (ON or OFF) to configure:
- SETUP > GPI > GPI OUTPUTS > GPI OUT x ON
- SETUP > GPI > GPI OUTPUTS > GPI OUT x OFF
- Here “x” represents the GPI number from 0 to 7
- If the GPI is unused, > NONE < will be displayed on the front panel
- Use the joystick arrows [+] and [-] to select the event that should control the appropriate GPI output port

Events triggers can be set to a range of different good and bad states relating to:

- External reference signal
- SDI video inputs
- Temperature
- Voltages
- Compact Flash usage
- Network interface
- Backplane presence
- DSK fader position and fade-to-black position
- Store loading
- EAS running or stopped
- Audio mixing, fade to silence, and voice-overs
- Audio loss or type change (embedded or external AES)

Note: The full list of event actions that can trigger GPI Outputs is shown in ANNEX 2

GPI outputs can also be set on or off virtually via the OPERATE > GPI OUTPUT front panel menu or automation.

The GPI output events defined for a system are stored in /home/params/gpi.xml

4.11 Graphics Co-Processors

The LGK-3901/DSK-3901 can be configured for use with the following Miranda Graphics Co-Processors:

- Miranda Imagestore Intuition+ Graphics Co-Processor
- Miranda VertigoXG Graphics Processor (Single channel)

The Co-Processor can generate complex output incorporating multiple objects (animations, clips, images and text) on numerous virtual keying layers. These scenes are then composited into one signal that is fed into the card via Fill/Key inputs and keyed as a 'Load Live' signal on any of the available keying layers. If this signal includes embedded audio then this can provide voice-over input to the LGK-3901/DSK-3901 provided that the Audio option is enabled.

It is generally recommended that the Graphics Co-Processor be controlled from an independent Oxtel Protocol Automation link. However, the LGK-3901/DSK-3901 can also be placed in a mode where it forwards commands to the Co-Processor via a serial link. In this case only one Oxtel Protocol Automation control link is required.

Note: This does not apply to systems using Presmaster Protocol Automation control.

4.11.1 Command Forwarding to a Co-Processor

The keying layer parameter in the Oxtel Automation Protocol is always represented by a single zero-based ASCII character in hexadecimal and so the character range is limited from 0x0 to 0xF. LGK-3901 has five keying layers and DSK-3901 has two keying layers, and numbers for these keying layers are reserved. The higher numbers are then used to address layers on the associated Graphics Co-Processor as per the following table:

LGK-3901		DSK-3901	
Layer Number	Co-Processor	Layer Number	Co-Processor
0x0 (DSK 1)		0x0 (DSK 1)	
0x1 (DSK 2)		0x1 (DSK 2)	
0x2 (DSK 3)		0x2	0x0
0x3 (DSK 4)		0x3	0x1
0x4 (DSK 5)		0x4	0x2
0x5	0x0	0x5	0x3
0x6	0x1	0x6	0x4
0x7	0x2	0x7	0x5
0x8	0x3	0x8	0x6
0x9	0x4	0x9	0x7
0xA	0x5	0xA	0x8
0xB	0x6	0xB	0x9
0xC	0x7	0xC	0xA
0xD	0x8	0xD	0xB
0xE	0x9	0xE	0xC
0xF	0xA	0xF	0xD

For example, if an LGK-3901 receives a command to load a graphic into layer 0x5, it will forward this command onto the Co-Processor to load the graphic into the first keying layer. To do this the LGK-3901 subtracts 5 from the layer value before relaying the command.

Commands forwarded by LGK-3901 may address up to 11 keying layers on the Co-Processor, and DSK-3901 may address up to 14 keying layers on the Co-Processor,

Command forwarding is supported for the following Oxtel Automation commands:

Cmd	Description
0	Fade To/From Black
1	Fade Keyer Up/Down
2	Cut To/From Black
3	Cut Keyer Up/Down
@	Set Fader Angle
B	Set Transition Duration
8	Load Image From Library
9	Save Image To Library
G	Set Image Position
I	File Save Masked
A	Erase Store
O	Enquire Loaded Image Status
F	Set Clip Gain Transparency
R0	Load Image
R1	Save Image
Rm	Image Load Mode
S0	Start Animation
S1	Stop Animation
S2	Select Animation Frame
Y6	Enable Video Tallies
Z0	Update Text Field
Z1	Change Box Size and Position
Z2	Change Text Font and Color
Z3	Render Box
Z4	Change Image
Z5	Run Strap
Z6	Set Text Background to Matte
Z7	Set Text Background to Gradient
Z8	Set Text Background to Clear
Z9	Set Text Drop Shadow
ZA	Set Transparency
ZB	Set Text Tracking
ZC	Set Strap Speed
ZD	Set Template Background
ZE	Set Text Alignment
ZF	Set Text Wrapping
Zd	Text Box Update
Ze	Image Update
Zg	Pause/Restart Animation
m0	Set Global Datasource Value
m1	Delete Global Datasource
m2	Set Layer-Specific Datasource Value
m3	Delete Layer-Specific Datasource
m8	Delete All Datasources

To configure an LGK-3901/DSK-3901 to forward commands onto a Graphics Co-Processor connect a serial link between the card and the Co-Processor and set the protocol and baud rate for the serial port as follows:

- SETUP > SERIAL COMMS > SERIAL PORTS > COM 1/2 > PROTOCOL > INTUITION
- SETUP > SERIAL COMMS > SERIAL PORTS > COM 1/2 > BAUD RATE > 19200

4.11.2 Automatic Keyer Management

Automatic Keyer Management options may be used in conjunction with command forwarding to simplify the control of LGK-3901/DSK-3901 and Graphics Co-Processor keying layers.

Whenever the LGK-3901/DSK-3901 receives a command from automation to cut up a layer on the Co-Processor, the Automatic Keyer Management options permit a 'Load Live' to occur with the associated keying layer on the LGK-3901/DSK-3901 being cut up automatically. Also if automation cuts down all Co-Processor layers the LGK-3901/DSK-3901 can cut down the associated keying layer and turn off 'Load Live'.

The Automatic Keyer Management options are set up via the following front panel menu options:

- SETUP > INTUITION > KEYER ASSIGN
 - Assigns Automatic Keyer Management to one keying layer of the LGK-3901/DSK-3901
- SETUP > INTUITION > KEYER RELEASE
 - Defines how the assigned keyer of the LGK-3901/DSK-3901 is released when all Co-Processor layers are cut down. When enabled the assigned keying layer is automatically cut down. When disabled the assigned keying layer remains cut up.
- SETUP > INTUITION > FILL&KEY INPUT
 - Determines which external fill/key is routed to the assigned keyer for Automatic Keyer Management

The status of the Co-Processor layers controlled by command forwarding may be monitored from the SETUP > INTUITION > KEYER STATUS front panel menu.

Note: Automatic Keyer Management will only work correctly when used in conjunction with Command Forwarding. This is because the LGK-3901/DSK-3901 maintains the layer status of the Graphics Co-Processor based on the automation commands it forwards. If the operator changes the layer status of the Co-Processor in any other way (for example via its own front panel), the LGK-3901/DSK-3901 will not be aware of any change and will not be able to perform automatic keyer management correctly.

4.11.2.1 Example

Below is an example of automation cutting up two layers on a Graphics Co-Processor by using command forwarding through an LGK-3901 with the following settings:

- Default Keyer Assign DSK 1
- Keyer Release Enabled
- Fill & Key Input Fill-1/Key-1

1. Cut up one Co-Processor layer "35 1"
 - LGK-3901 maps the command "35 1" to "30 1" and forwards it to the Co-Processor
 - The Co-Processor cuts up its first layer
 - LGK-3901 performs 'Load Live' on DSK 1 using Fill-1/Key-1

- LGK-3901 cuts up its own DSK 1 if it was previously cut down
 - The Co-Processor output is now visible
2. Cut up another Co-Processor layer “36 1”
 - LGK-3901 maps the command “36 1” to “31 1” and forwards it to the Co-Processor
 - The Co-Processor cuts up its second layer
 - LGK-3901 does nothing with its own keying layers
 3. Cut down one of the Co-Processor layers “35 0”
 - LGK-3901 maps the command “35 0” to “30 0” and forwards it to the Co-Processor
 - The Co-Processor cuts down its first layer
 - LGK-3901 does nothing with its own keying layers because there is still one Co-Processor layer active
 4. Cut down the final visible layer of the Co-Processor “36 0”
 - LGK-3901 maps the command “36 0” to “31 0” and forwards it to the Co-Processor
 - The Co-Processor cuts down its second layer
 - LGK-3901 cuts down DSK 1 and turns off ‘Load Live’

4.12 Closed Captions

Closed caption information is usually passed through the LGK-3901/DSK-3901 whatever the Closed Caption option is set to. The reason that the option exists is that when the standard is set as NTSC (525), closed caption information is found within the active picture (lines 20/21), and so it will be destroyed when graphics are keyed over these lines.

When this option is enabled via the SETUP > MISCELLANEOUS > CLOSED CAP front panel menu, the LGK-3901/DSK-3901 ensures that the close caption information is preserved regardless of keyed graphics being present on lines 20/21. Disabling the option instructs the keyers/mixers to treat these lines as part of the active picture so that they may be keyed over.

On HD and 3G standards, close caption is contained in vertical ancillary data (VANC) on line 9, which is outside the active picture. Since this is never processed by the keyers the close caption information is preserved whatever the option selected.

4.13 Timecode

The following timecodes are supported by LGK-3901/DSK-3901:

- Linear (or Longitudinal) Timecode (LTC)
 - Received via the 44-pin Terminal Block Adaptor (see sections 5.5 and 5.4.10)
 - Supports Dropframe and Non-Dropframe
 - Supports Forward and Backward directions
- Vertical Interval Timecode (VITC)
 - Received via the external reference
 - Supports Dropframe and Non-Dropframe

When physically connected and activated, the LTC or VITC timecode source is used to adjust the internal LGK-3901/DSK-3901 clock once per minute. When a timecode source is not connected an NTP server may be used to periodically update the system clock. Alternatively the internal clock will free run.

Timecode source, timecode status and clock time may be viewed via the SETUP > TIMECODE front panel menu.

4.14 Message Logging

Message logs are generated by LGK-3901/DSK-3901 to record warnings and errors during operation. The message log file can be used to help diagnose a range of different issues, from invalid parameters in automation commands to hardware faults.

Two message log files are recorded: “messages” records log messages since the card was powered on; “messages.old” records log messages for the previous powered session, in case the card was restarted after a failure.

Message logs can be downloaded from the LGK-3901/DSK-3901 Web Page as described in section 8.5.

4.14.1 Logging Level

The logging level is set via the SETUP > LOGGING > LOGGING LEVEL front panel menu. The possible options are:

Logging Level	Description
Errors Only	Reports errors, including automation commands that were invalid when received. No valid automation commands get logged in this mode
Media/Keying	Records all valid media and keying activity (in addition to errors). This provides a full audit of graphics that have appeared on-air
Verbose	Provides a full record of all automation commands received by the unit, whether valid or not
Verbose + OxSox	Provides a full record of all automation (Oxtel and Densité) and OxSox commands received by the unit, whether valid or not

4.14.2 External Logging

The IP address of an external logging server is set via the SETUP > LOGGING > LOGGING SERVER front panel menu. This allows a remote syslog² server to be set up, permitting log files to be logged externally. Setting up a syslog server is well documented on the Internet; however Miranda Support can also provide details.

4.14.3 Local Logging

Local logging to the Compact Flash storage is enabled or disabled via the SETUP > LOGGING > LOCAL LOGGING front panel menu. Disabling local logging this can reduce wear to the Compact Flash device, but it should only be disabled if a logging server has been set up (see above).

² syslog is a standard for forwarding log messages in an IP network

4.15 System Configuration

The front panel USER PRESETS menu is used to import and export different LGK-3901/DSK-3901 system configurations required for different user applications. For example a card may be switched between different video standards by creating two configurations and then importing the appropriate configuration file when a change is required.

System configurations may also be transferred between cards to ensure consistency of state between them. After an import, all settings within the selected configuration file are validated against the capabilities of the new device. This ensures that any hardware or Options differences between units are catered for correctly.

System settings can be split up into two categories:

- Persistent Settings from the SETUP and CONFIG ALARMS front panel menus
- Volatile Settings from the OPERATE front panel menu

When exporting a configuration, the file generated always encapsulates all persistent settings currently applied to the system.

Volatile settings are not actually saved within the configuration file; however the “restart behaviour” of each individual setting is stored. The three possible restart behaviours of volatile settings are as follows:

- Reset to the factory-default value
- Reset to a user-defined value
- Persist from the previous session

The standard restart behaviour of volatile settings is defined within the device capabilities; however behaviour can be modified via the Configurator tool, a Windows application accompanying the LGK-3901/DSK-3901 software release.

Note: Please see section 7 for details of the Configurator application.

Such granularity of management over system state gives a high level of control over system restart behaviour. For example, it may be required on restart of an LGK-3901 that DSK1, DSK2, DSK3 and DSK4 be cut-down and unloaded, but DSK5 be cut up and loaded with the station logo.

4.15.1 Importing Configurations

The USER PRESETS > IMPORT option allows the user to select from a list of available configuration files and choose which one will be used on the next system restart. Use the [+] and [-] joystick arrows and [SELECT] to select and confirm a new file.

For the new setting to take effect the system must be restarted. A prompt will therefore appear after selecting the new configuration file requesting a system restart. Use the joystick arrows to select YES and press [SELECT]. Alternatively a software reset can be manually selected at a later date.

If the user wishes to cancel any selection made (assuming no restart occurred), then re-enter the menu and select “[KEEP CURRENT]”. This means that the active configuration will continue to persist on restart.

During the restart, the last imported configuration (or the active configuration if there was no import) is validated against the device capabilities and the resulting state becomes the new “active configuration”. The active configuration is subsequently modified on an ongoing basis by changes to persistent states (and volatile states which are flagged to persist).

Assuming that no further configuration files are imported (normally the case once a system is set up correctly) then the active configuration continues to be applied on subsequent restarts.

The active configuration from any LGK-3901/DSK-3901 card can be copied into the Configurator tool at any time so that granular edits can be made to the restart behaviour of volatile settings. The new configuration file can then be saved back onto the LGK-3901/DSK-3901 unit and re-imported when required.

4.15.2 Exporting Configurations

The USER PRESETS > EXPORT front panel menu option causes the active configuration of the LGK-3901/DSK-3901 to be saved as a snapshot. The name of the file is generated from the current date and time in the form:

- YYYYMMDD_HHMMSS.xml

This configuration file can be re-imported later, copied onto different LGK-3901/DSK-3901 unit(s), or opened within the Configurator tool for further editing.

4.15.3 Previous Configuration

The USER PRESETS > LAST CONFIG front panel menu option shows the name of the last configuration file that was imported. This is really just a reminder to the user of which configuration file the active configuration was originally based off. This value persists between system restarts providing there are no further imports.

5 Installation

5.1 Unpacking LGK-3901

Make sure the following items have been shipped with your LGK-3901. If any of the following items are missing, contact your distributor or Miranda Technologies Inc.

- LGK-3901 3G/HD/SD Logo Inserter & Downstream Keyer (2 cards connected)
- LGK-3901-3DRP-R Double Rear Panel
- LGK-44-TBA Terminal Block Adaptor (if ordered)

The memory size of the fitted Compact Flash should correspond to the order.

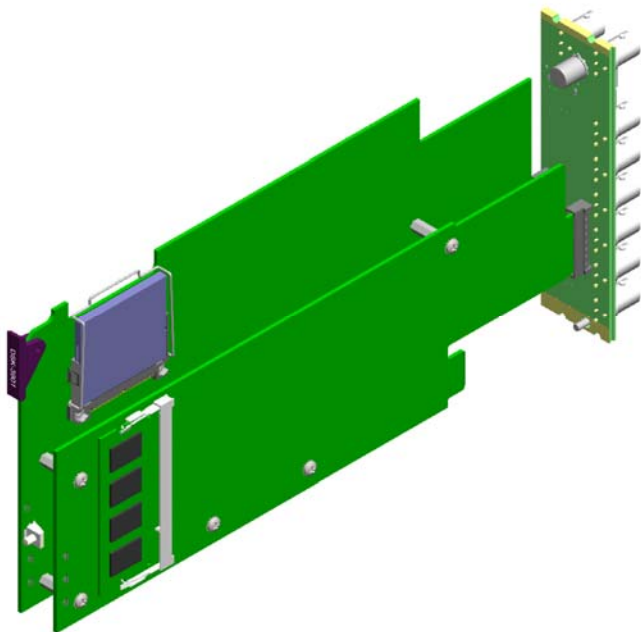
5.2 Unpacking DSK-3901

Make sure the following items have been shipped with your DSK-3901. If any of the following items are missing, contact your distributor or Miranda Technologies Inc.

- DSK-3901 3G/HD/SD Downstream Keyer (2 cards connected)
- DSK-3901-3DRP-R Double Rear Panel
- DSK-44-TBA Terminal Block Adaptor (if ordered)

The Compact Flash memory size should be 4GB.

5.3 Installation in the Densité frame



The LGK-3901/DSK-3901 and its associated rear connector rear panel must be mounted in a Densité 3 RU frame. It is not necessary to switch off the frame's power when installing or removing the card. See the Densité Frame manual for detailed instructions for installing cards and their associated rear panels.

The LGK-3901/DSK-3901 has multiple inputs and outputs, and requires a double-width rear panel.

The LGK-3901/DSK-3901 comprises two physical cards and must be installed into the two slots covered by the panel in order to mate with the panel's connectors.

If it is placed in the wrong slot, the front panel LED will flash red. No damage will result to the device should this occur.

Figure 5.1 Installation of LGK-3901 and LGK-3901-3DRP-R in a Densité frame

5.4 Rear Panel and Connectors

LGK-3901-3DRP-R and DSK-3901-3DRP-R rear panels have the following IO connections:

Name	Type	Description
PGM IN	BNC	Program Input
FILL 1 IN	BNC	Fill-1 Input
KEY 1 IN	BNC	Key-1 Input
FILL 2 IN	BNC	Fill-2 Input
KEY 2 IN	BNC	Key-2 Input
PMG OUT	BNC	Program Output
PVW OUT	BNC	Preview Output
REF IN	BNC	Analogue Reference Input
ETH	RJ45	Ethernet 10/100BaseT Network Port
COM 1	RJ45	Serial Communication Port (automation or EAS)
COM 2	RJ45	Serial Communication Port (automation or EAS)
GPIO / LTC / AES IN	44-pin	Connector to 44-pin Terminal Block Adaptor

All connectors are female

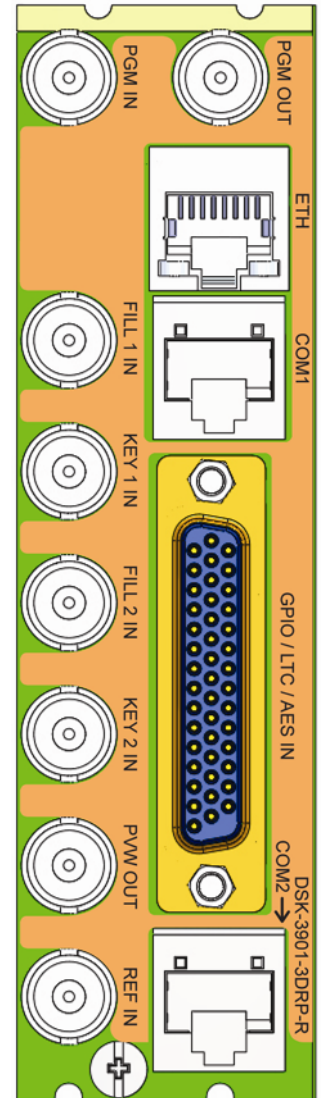


Figure 5.2 LGK-3901-3DRP-R / DSK-3901-3DRP-R Rear Panel Connectors

5.4.1 PGM IN

PGM IN is a BNC that receives input video for the Program chain. The same signal can also be routed to the Preview chain if required.

If an invalid SDI signal is present then the input to the Program Channel will revert to black video. Alternatively a color field or test pattern may be substituted in place of valid SDI.

5.4.2 FILL 1 IN and KEY 1 IN

FILL 1 IN and KEY 1 IN are BNCs that receive the first external fill/key pair from an external graphics device. This fill/key may then be keyed onto any of the available keying layers (five for LGK-3901 and two for DSK-3901). Embedded audio from the fill may also be applied as a voice-over.

5.4.3 FILL 2 IN and KEY 2 IN

FILL 2 IN and KEY 2 IN are BNCs that receive the second external fill/key pair from an external graphics device. This fill/key may then be keyed onto any of the available keying layers (five for LGK-3901 and two for DSK-3901). Embedded audio from the fill may also be applied as a voice-over.

FILL 2 IN may alternatively receive video input for the Preview chain or the B input of the AB mixer.

5.4.4 PGM OUT

PGM OUT is a BNC which transmits the Program output. This comprises of the PGM IN signal along with any graphics that are keyed onto the Program Channel, plus embedded audio output from the audio mix engine. An exception to this is when a test pattern is routed directly to PGM OUT (see section 6.4.10).

Whenever LGK-3901/DSK-3901 software is inactive a bypass relay on the rear panel connects PGM IN directly to PGM OUT. This ensures that input video is always passed through the device, although the card loses its ability to key graphics at this time.

5.4.5 PVW OUT

PVW OUT is a BNC which transmits the Preview output. This comprises of the Preview Input signal (either PGM IN or FILL 2 IN) along with any graphics that are keyed onto the Preview Channel, plus embedded audio output from the audio mix engine. An exception to this is when a test pattern is routed directly to PGM OUT (see section 6.4.10).

Graphics for each keying layer is shared between the Program and Preview video chains, but keyer state is independent. This enables media (LGK-3901 only) or external fill/key to be previewed before being cut up on the Program video chain.

Audio for Program and Preview can be controlled independently of one another. This enables Easyplay clips (LGK-3901 only) or external voice-overs to be previewed before being heard on the Program output.

5.4.6 REF IN

REF IN is an input BNC for a standard analogue reference such as SD black burst and HD tri-level sync. Both 50Hz and 59.94Hz frame rates are accepted, but all of the input signals (including Fill and Key) must use the same frame rate.

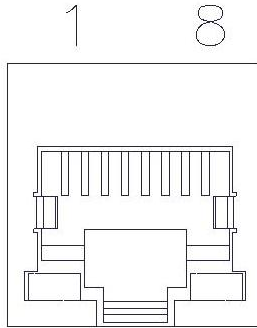
Section 4.4.1 shows the compatibility matrix between REF IN type and output video format.

5.4.7 ETH

ETH is an RJ45 Ethernet 10/100BaseT port which automatically negotiates the fastest speed possible for downloading media (LGK-3901 only) and configuration files (LGK-3901/DSK-3901).

The pin-out of the ETH port is:

Pin No	Signal Name RJ45
1	TDP
2	TDN
3	RDP
4	NC
5	NC
6	RDN
7	NC
8	NC



5.4.8 COM 1

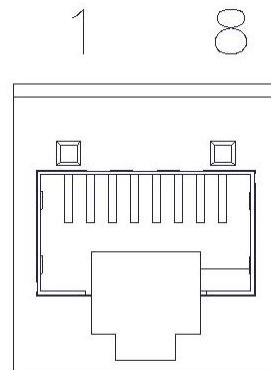
COM 1 is an RJ45 port that provides serial bidirectional communications to external Automation systems, EAS units (LGK-3901 only with LGK-3901-OPT-EAS) or a slave Intuition XG device. The serial port type can be configured as RS232 or RS422, and the baud rate set to 1200, 9600, 19200, 38400, 57600 or 115200. The serial port can also be set to receive Oxtel Automation commands or to transmit certain Oxtel Automation commands to a slave Intuition XG device. For EAS the serial port will receive ENDEC 1822 and TFT EAS 911T protocols, and for the Temperature Probe it will received ST61XX TEMP SENS protocol.

5.4.9 COM 2

COM 2 is an RJ45 port that provides identical functionality to COM 1. This allows two external devices (for example, Automation and EAS) to independently control the LGK-3901/DSK-3901.

The pin-out of the COM 1 and COM 2 ports is:

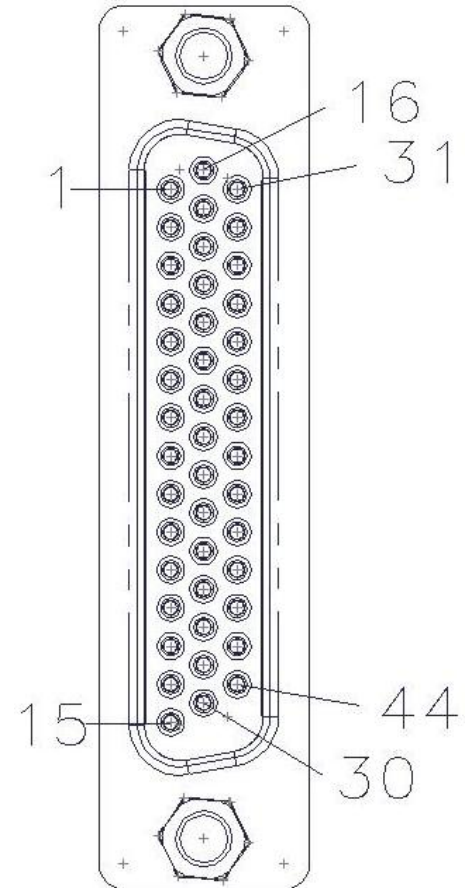
Pin No	Signal Name RS422	Signal Name RS232
1	TX+	RTS
2	TX-	TXD
3	RX+	CTS
4	NC	NC
5	NC	NC
6	RX-	RXD
7	NC	NC
8	GND	GND



5.4.10 GPIO / LTC / AES IN

GPIO / LTC / AES IN is a 44-pin D-type connector for use with the LGK-44-TBA-75/DSK-44-TBA-75 or LGK-44-TBA-110/DSK-44-TBA-110 terminal block adaptors, which are described in section 5.5.

Pin No	Signal Name	Pin No	Signal Name	Pin No	Signal Name
1	GPI_IN_2	16	GPI_IN_1	31	GPI_IN_0
2	GPI_IN_4	17	GPI_IN_3	32	GND
3	GPI_IN_6	18	GPI_IN_5	33	GPI_IN_7
4	AES_IN_P4	19	AES_IN_N4	34	GND
5	AES_IN_P3	20	AES_IN_N3	35	LTC_IN
6	AES_IN_P2	21	AES_IN_N2	36	GND
7	AES_IN_P1	22	AES_IN_N1	37	GND
8	NC	23	NC	38	GND
9	NC	24	NC	39	GND
10	NC	25	NC	40	NC
11	NC	26	NC	41	GND
12	NC	27	NC	42	GPI_OUT_7
13	GPI_OUT_5	28	GPI_OUT_6	43	GND
14	GPI_OUT_3	29	GPI_OUT_4	44	GPI_OUT_0
15	GPI_OUT_1	30	GPI_OUT_2		



5.5 Terminal Block Adaptors

Terminal Block Adaptors for the LGK-3901/DSK-3901 are connected to the 'GPIO / LTC / AES IN' 44-pin D-type connector described in section 5.4.10. There are four variants supported:

- LGK-44-TBA-75 / DSK-44-TBA-75
- LGK-44-TBA-110 / DSK-44-TBA-110

The LGK-3901/DSK-3901 Terminal Block Adaptors support the following signals:

- 8 x General Purpose Interface (GPI) Input ports
- 8 x General Purpose Interface (GPI) Output ports
- Linear Timecode (LTC)
- 4 x AES for audio voice-over inputs

5.5.1 LGK-44-TBA-75 / DSK-44-TBA-75

LGK-44-TBA-75/DSK-44-TBA-75 supports 75 ohm unbalanced AES audio. Each AES pair has a dedicated BNC connector.

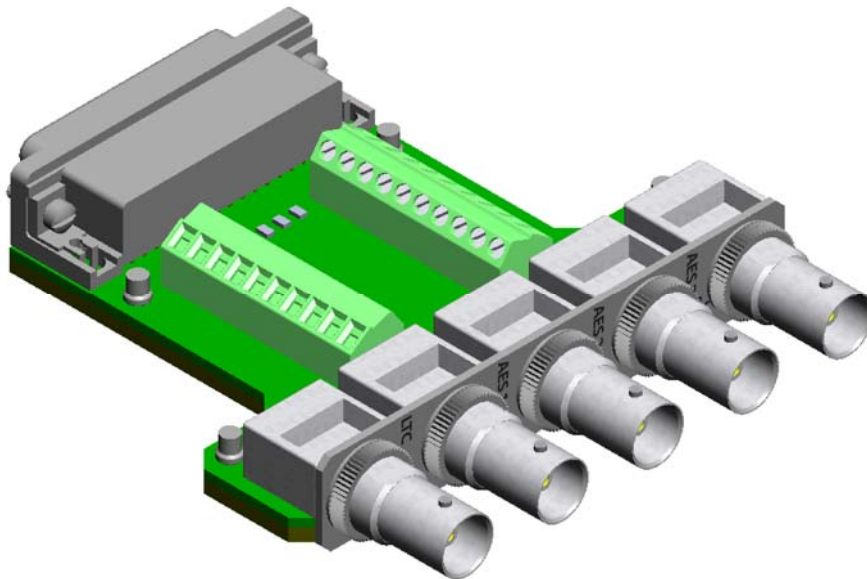


Figure 5.3 LGK-44-TBA-75 / DSK-44-TBA-75

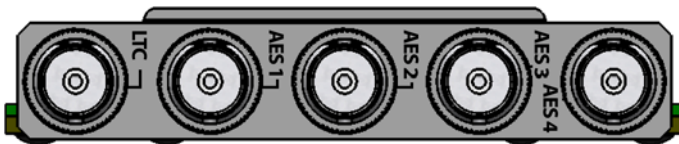


Figure 5.4 44-TBA-75 Rear Connectors

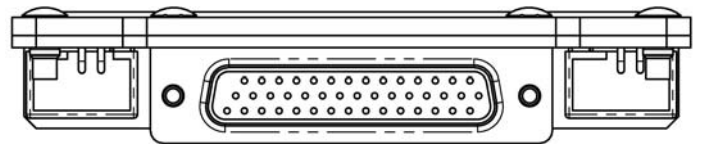


Figure 5.5 44-TBA-75 Front Connector

5.5.2 LGK-44-TBA-110 / DSK-44-TBA-110

LGK-44-TBA-110/DSK-44-TBA-110 supports 110 ohm balanced AES audio. AES pairs all come from a terminal block.

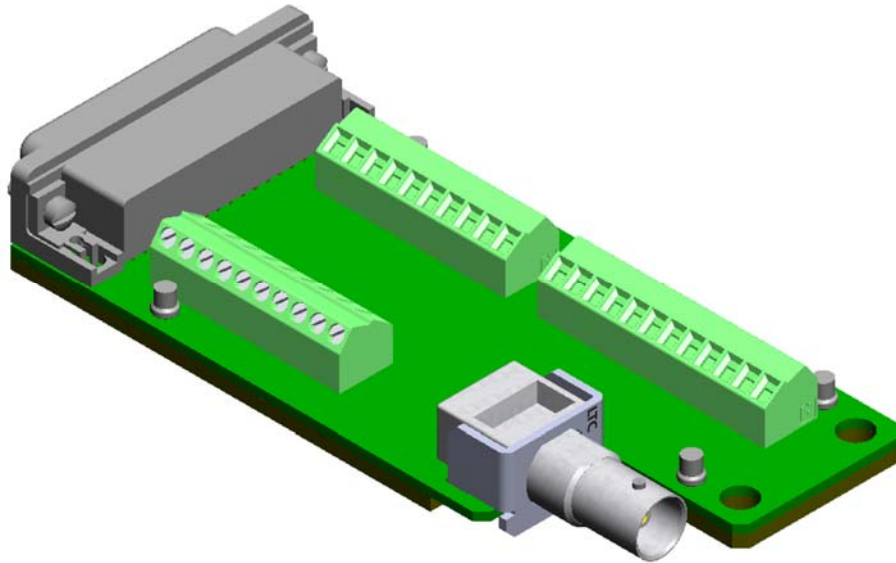


Figure 5.6 LGK-44-TBA-110 / LGK-44-TBA-110

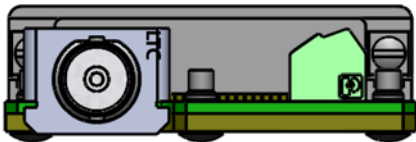


Figure 5.7 44-TBA-110 Rear Connector

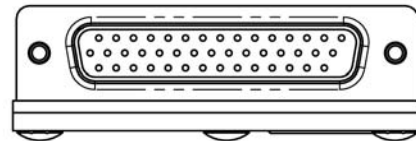


Figure 5.8 44-TBA-110 Front Connector

6 Operation

6.1 Control Options

The LGK-3901/DSK-3901 can be controlled in several different ways:

- The local Densité controller front panel and its push-buttons can be used to move through a menu of parameters and to adjust parameter values (see section 6.3)
- Miranda's iControl system can be used to access the card's operating parameters from a remote computer, using a convenient graphical user interface (GUI) (see section 6.4)
- External Automation systems may control all aspects of LGK-3901/DSK-3901 functionality via serial port or Ethernet (see Oxtel Series Automation Protocol document version 15)
- A GPI controller switch may be used to trigger internal command macros (see sections 4.10.1 and 5.4.10)
- Emergency Alert System (EAS) receiver via serial port and GPI – (LGK-3901 only with LGK-3901-OPT-EAS)

6.2 Card-Edge Status LED

The status monitor LED is located on the front card-edge of the LGK-3901/DSK-3901, and is visible through the front access door of the Densité frame. This multi-color LED indicates the status of the LGK-3901/DSK-3901 by color, and by flashing/steady illumination.

The chart shows how the various error conditions that can be flagged on the LGK-3901/DSK-3901 affect the LED status.

- Error conditions may be associated with any possible LED status depending on user requirements
- See Section 6.4.13: "iControl Alarm Config" for details of how to configure LED status for each error condition.
- The factory default status is shown by a ✱

The LED will always show the most severe detected error status that it is configured to display. In the chart error severity increases from left to right, with green representing no error/disabled, and flashing red the most severe error.

Error Condition	LED Status			
	Green	Yellow	Red	Flashing Red
Ext Reference – Unlocked		✱		
Ext Reference – Mismatch			✱	
PGM In – Video Loss			✱	
PGM In – Video Mismatch			✱	
PGM In – Input Timing			✱	
Fill-1 – Video Loss		✱		
Fill-1 – Video Mismatch			✱	
Fill-1 – Input Timing			✱	
Key-1 – Video Loss		✱		
Key-1 – Video Mismatch			✱	
Key-1 – Input Timing			✱	

GUIDE TO INSTALLATION AND OPERATION

Fill-2 – Video Loss		✱		
Fill-2 – Video Mismatch			✱	
Fill-2 – Input Timing			✱	
Key-2 – Video Loss		✱		
Key-2 – Video Mismatch			✱	
Key-2 – Input Timing			✱	
Overall Timing			✱	
Embed Audio Ip – Audio Feed [1 to 2] – Channel [1 to 16] – Type Change	✱			
Embed Audio Ip – Audio Feed [1 to 2] – Channel [1 to 16] – Audio Loss	✱			
AES Audio Ip – Pair [1 to 4] – Channel [1 to 2] – Type Change	✱			
AES Audio Ip – Pair [1 to 4] – Channel [1 to 2] – Audio Loss	✱			
Temp Fail				✱
Voltage Fail				✱
Network Link			✱	
CF Usage			✱	
Backplane Loss				✱
Video FTB	✱			
Audio FTS	✱			

✱ : Factory default.

If the LED is Flashing Yellow, it means that the card is selected for local control using the Densité frame’s control panel. See Section 6.3 for details.

The following styles of error condition are supported:

- Unlocked The external reference signal is missing or bad
- Mismatch The input signal does not match the output video standard
- Video Loss Video is missing from the input
- Input Timing Input timing either follows behind or is more than one line before the PGM Output
- Overall Timing Any one of the available Input Timing errors is triggered
- Audio Type Change Audio type changes between PCM and non-PCM
- Audio Loss Audio signal is not present
- Temp Fail FPGA temperature is greater than 80°C
- Voltage Fail Any one of the available voltages is out of tolerance by ±5%
- CF Usage The disk usage of the Compact Flash exceeds 80% of capacity
- Backplane Loss The LGK-3901/DSK-3901 is not connected to the rear panel
- Video FTB The most downstream keyer (DSK 5 or DSK 2) has been faded to black
- Audio FTS Audio has been faded to silence

Alarms levels are set up via the CONFIG ALARMS front panel menu, Configurator Tool (see section 7.2) or iControl (see section 6.4.13)

6.3 Local Control using the Densité Frame Control Panel

6.3.1 Overview

Push the SELECT button on the LGK-3901/DSK-3901 card edge (see section 4) to assign the local control panel to operate the LGK-3901/DSK-3901. Use the control panel buttons to navigate through the menu, as described below.

All of the cards installed in a Densité frame are connected to the frame's controller card, which handles all interaction between the cards and the outside world. There are no operating controls located on the cards themselves. The controller supports remote operation via its Ethernet ports, and local operation using its integrated control panel.

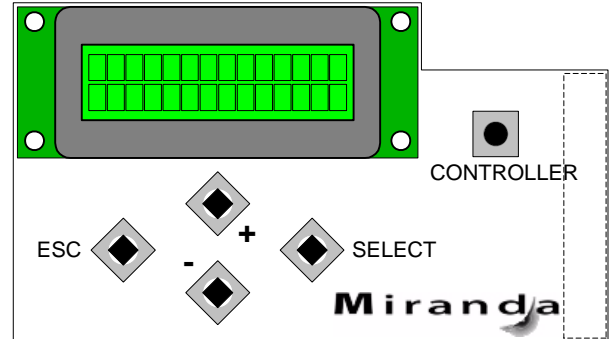


Figure 6.1 Densité Frame local control panel

The local control panel is fastened to the controller card by a hinged connector, and when installed is located in the front center of the frame, positioned in front of the power supplies. The panel consists of a display unit capable of displaying two lines of text, each 16 characters in length, and five pushbuttons.

The panel is assigned to operate any card in the frame by pushing the SELECT button on the front edge of that card.

- Pushing the CONTROLLER button on the control panel selects the Controller card itself.
- The STATUS LED on the selected card flashes yellow.

The local control panel displays a menu that can be navigated using the four pushbuttons located beneath the display. The functionality of the push buttons is as follows:

[+] [-] Used for menu navigation and value modification

[SELECT] Gives access to the next menu level. When a parameter value is shown, pushing this button once enables modification of the value using the [+] and [-] buttons; a second push confirms the new value

[ESC] Cancels the effect of parameter value changes that have not been confirmed; pushing [ESC] causes the parameter to revert to its former value.

Pushing [ESC] moves the user back up to the previous menu level. At the main menu, [ESC] does *not* exit the menu system. To exit, re-push the [SELECT] button for the card being controlled.

If no controls are operated for 30 seconds, the controller reverts to its normal standby status, and the selected card's STATUS LED reverts to its normal operating mode.

6.3.2 Menu for local control

The LGK-3901/DSK-3901 has operating parameters that may be adjusted locally at the controller card interface.

- Press the SELECT button on the LGK-3901/DSK-3901 front card edge to assign the Densité frame's local control panel to the LGK-3901/DSK-3901
- Use the keys on the local control panel to step through the displayed menu to configure and adjust the LGK-3901/DSK-3901.

Note: The complete menu structure is shown in Annex 1 to this document, beginning on page 96.

6.4 Remote Control Using iControl

The operation of the LGK-3901/DSK-3901 may be controlled using Miranda's iControl system.

- This section of the manual describes control panels associated with the LGK-3901/DSK-3901 and their use.
- Please consult the iControl User's Guide for information about setting up and operating iControl.
- Screenshots are taken from iControl version 3.50

In iControl Navigator or iControl Websites, double-click on the LGK-3901/DSK-3901 icon to open the control panel.

6.4.1 The iControl Graphic Interface Window

The basic window structure for the LGK-3901/DSK-3901 is shown in figure 6.2. The window identification line gives the card type (LGK-3901 in the case below) and the slot number where the card installed in its Densité frame.

There are three main sections in the window itself, identified in figure 6.2:

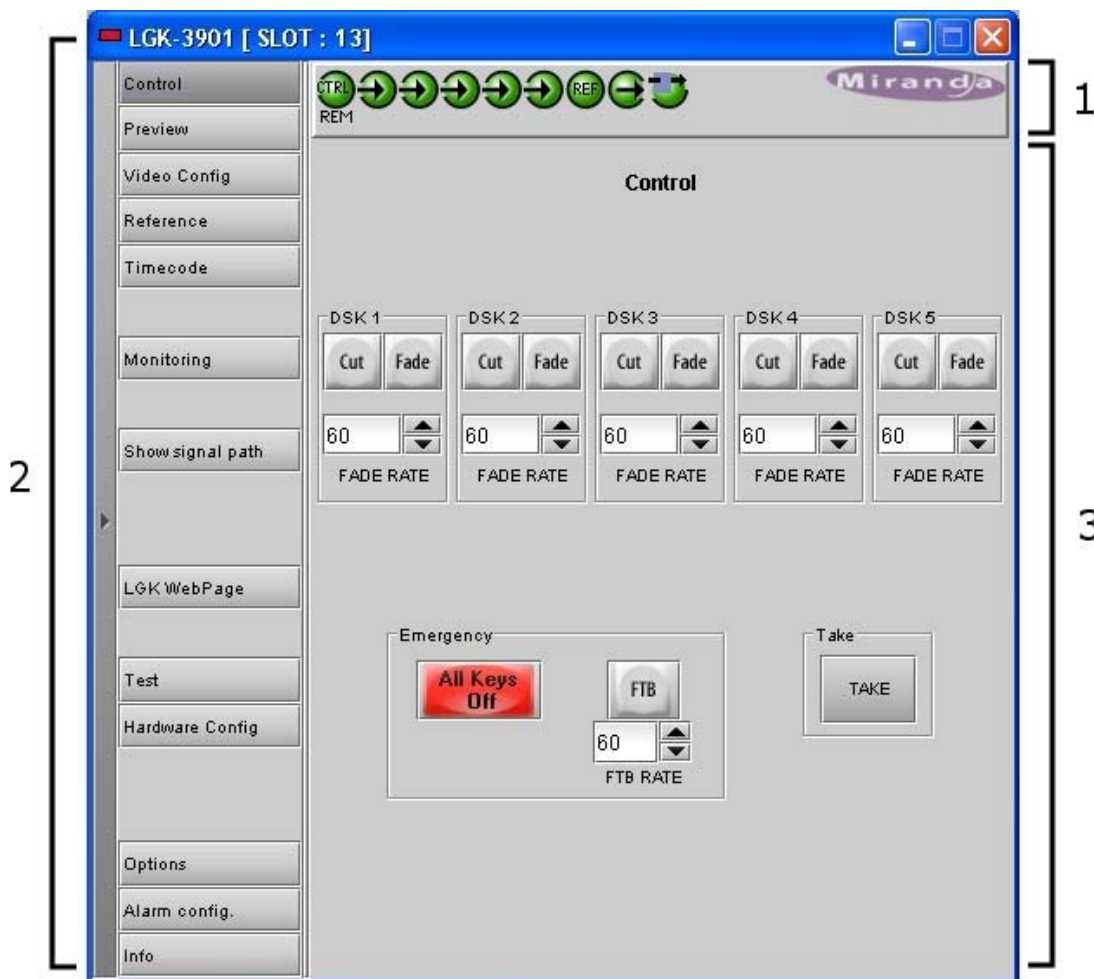


Figure 6.2 The iControl interface for the LGK-3901

1. The top section displays icons that report different statuses such as card communication status, input signal and reference signal format and statuses. In some instances, they relate to conditions defined through parameters settings.









Icon # 1 2 3 4 5 6 7 8 9












Move the mouse over an icon and a status message appears below the icon providing additional information. If there is an error, the error status message appears in the message area without mouse-over.



- If there are multiple errors, the error messages cycle so all can be seen
- The icon whose status or error message is shown is highlighted with a mauve background

The table below describes the various status icons that can appear, and how they are to be interpreted.

- In cases where there is more than one possible interpretation, read the error message in the iControl window to see which applies.

Icon #1 – Manual Card Configuration	
 (green)	Remote card control activated. The iControl interface can be used to operate the card
 (yellow)	Local card control active. The card is being controlled using the Densité frame control panel, as described in section 3.3. Any changes made using the iControl interface will have no effect on the card.
Icon #2 – PGM Input status	
 (green)	Video signal detected and valid. The specific format details will be listed if the cursor is moved over the icon.
 (red)	Video signal absent. No rear. Video format mismatch with output format. Input timing error.
Icon #3 – Fill-1 Input status	
 (green)	Video signal detected and valid. The specific format details will be listed if the cursor is moved over the icon.
 (red)	Video signal absent. No rear. Video format mismatch with output format. Input timing error.

Icon #4 – Key-1 Input status	
 (green)	Video signal detected and valid. The specific format details will be listed if the cursor is moved over the icon.
 (red)	Video signal absent. No rear. Video format mismatch with output format. Input timing error.
Icon #5 – Fill-2 Input status	
 (green)	Video signal detected and valid. The specific format details will be listed if the cursor is moved over the icon.
 (red)	Video signal absent. No rear. Video format mismatch with output format. Input timing error.
Icon #6 – Key-2 Input status	
 (green)	Video signal detected and valid. The specific format details will be listed if the cursor is moved over the icon.
 (red)	Video signal absent. No rear. Video format mismatch with output format. Input timing error.
Icon #7 – Reference	
 (green)	External reference or URS detected and valid. The specific reference source and format details will be listed if the cursor is moved over the icon, for example External, Black Burst 59.94.
 (yellow)	Valid reference is taken from the PGM IN.
 (red)	Reference missing (free-running).
Icon #8 – Reference	
 (green)	External reference matches the output video standard.
 (red)	External reference mismatch with the output video standard. See section 4.4.1.

Icon #9 – Operation Mode	
 (green)	Operation mode: process – normal processing of the input and output signal.
 (yellow)	Operation mode: TEST – color bar enabled.

2. The left portion of the window contains all the parameter groups, which become highlighted when they are selected; the main panel (3) then displays the group's set of parameters. Each of the groups is described in detail below.
3. The main panel contains all parameters specific to the group selected. It may contain several tabs to help manage the different parameters.

Each of the panels associated with the groups accessed from the buttons in section 2, and shown in section 3, is described individually below.

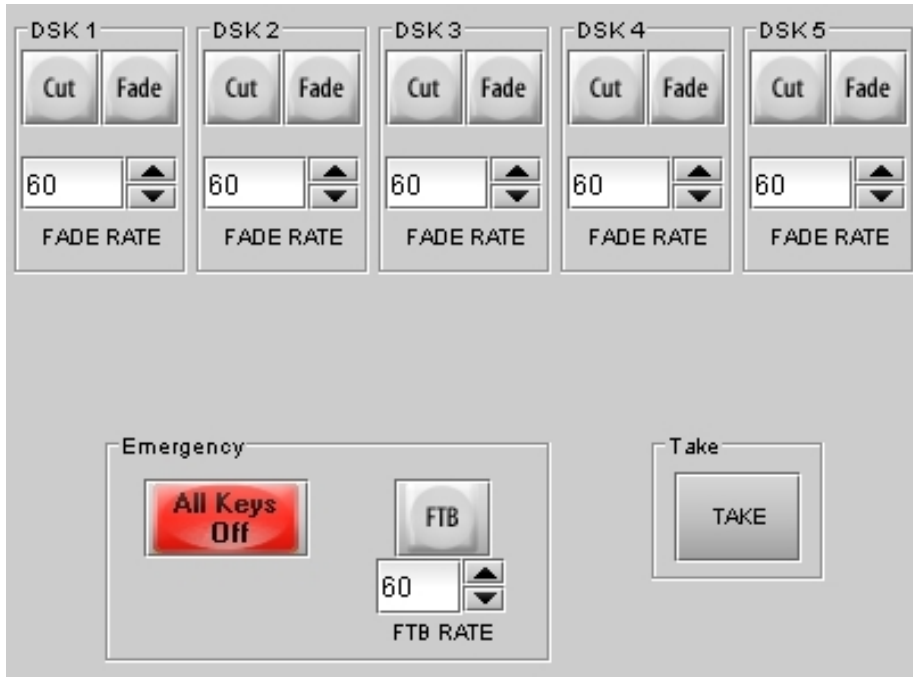
Note: The following features are currently missing but planned for future releases of the iControl GUI:

- Audio metering with selectable metering points
- Manual control of two audio voice-overs
- Alarms for audio presence and audio type change
- Thumbnails for loaded media
- Media browsing and store load selection
- AB mixer control, including selectable fade types (cut, cross-fade, V-fade, cut-fade, fade-cut and U-fade)
- AB mixer input selection
- Extra tap-off points for Preview video (PGM IN, and PGM AB MIX)

6.4.2 Control

The Control panel allows the available keyers (five for LGK-3901 and two for DSK-3901) to be monitored and controlled via an arm and take mechanism.

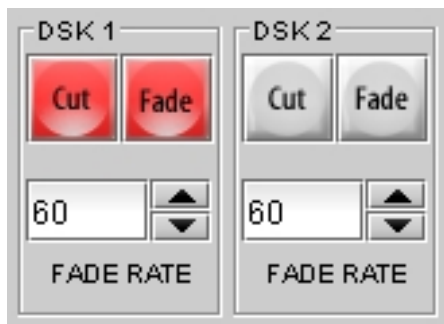
The following diagram shows the five keyers available for LGK-3901. Only two keying layers are shown for DSK-3901.



All keyers may be switched off in case of an emergency and the most downstream keyer may be faded to black.

6.4.2.1 Keyer Monitoring

The color of the buttons for each DSK monitors its fader state. When buttons are grey the keyer is cut down. When buttons are red the keyer is cut up.

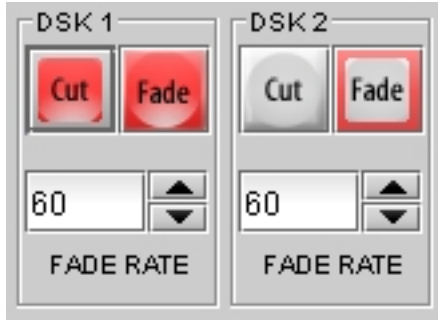


This figure shows the state of the Control Panel when:

- DSK 1 is cut up
- DSK 2 is cut down.

6.4.2.2 Keyer Control

The Cut buttons are clicked once to arm a cut transition (either up or down), and then clicked again to disarm the cut. The Fade buttons are clicked once to arm a fade transition (either up or down), and then clicked again to disarm the fade. Only one button type can be armed at any one time for any given keying layer.



Whenever a transition is armed the appropriate border color inverts to reflect the arm state. A second click disarms the button and its color changes back to its normal monitor state.

This figure shows the state of the Control Panel when:

- DSK 1 is up and armed to cut transition down
- DSK 2 is down and armed to fade transition up over 60 fields

As soon as any keyer is armed the TAKE button immediately activates (becomes red). Clicking on the TAKE button then commences the armed transition(s)

6.4.2.3 Emergency Recovery

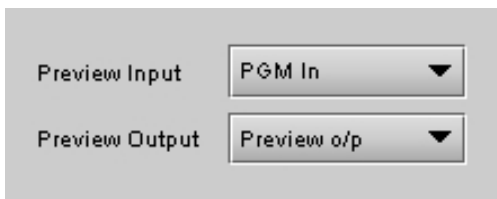
In the case of an on-air emergency, there are two actions that can be taken:

- All Keys Off
 - This button causes all keyers to be cut down immediately
 - This button is always active (red) and is not affected by the TAKE button
- FTB
 - This button causes the most downstream keyer to be faded to black over the associated rate
 - The FTB button becomes red when active. Clicking it again fades the most downstream keyer from black so that the Program Output is seen again.

6.4.3 Preview

The Preview panel allows selections for the Preview Input and Preview Output to be monitored and controlled.

The selected states are reflected in the Show Signal Path dialog (see section 6.4.8)

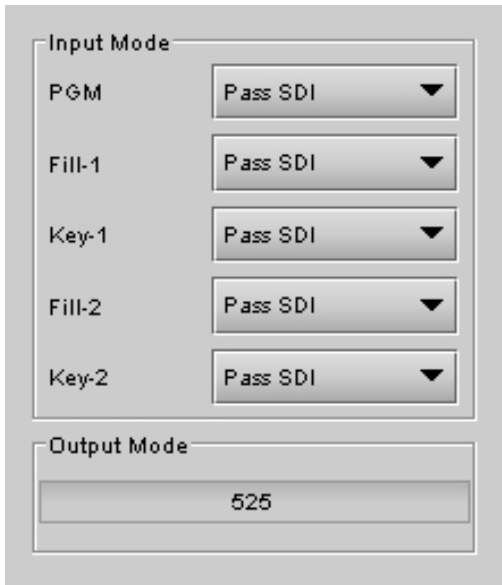


Note: Details of Preview Input and Output selections are covered in section 4.9.1.

6.4.4 Video Config

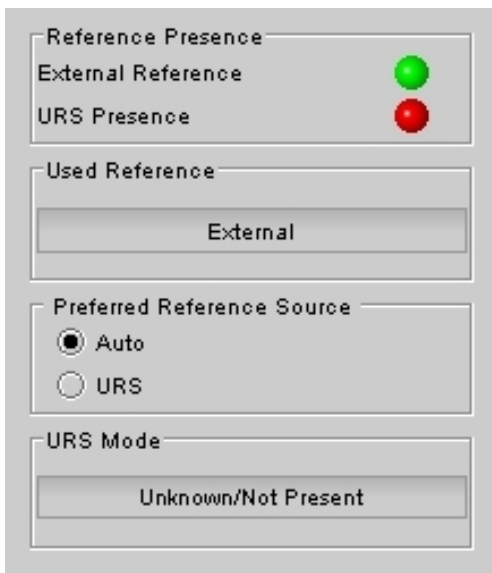
The Video Config panel allows the source for each physical input (PGM IN, FILL-1, KEY-1, FILL-2, KEY-2) to be changed between Pass SDI, Color Field 1, Color Field 2, Color Field 3 and Test Pattern 1. These selections are equivalent with the OPERATE > SET INPUTS options found in the front panel menu

The selected output video standard is also represented for reference.



6.4.5 Reference

The Reference panel provides extended information regarding the reference that is being used. This is in addition to the reference icons in the top section of the screen.



The Reference Presence group shows which external references (EXT REF and URS) are present and valid.

The Used Reference group displays which reference is actually being used by the LGK-3901/DSK-3901.

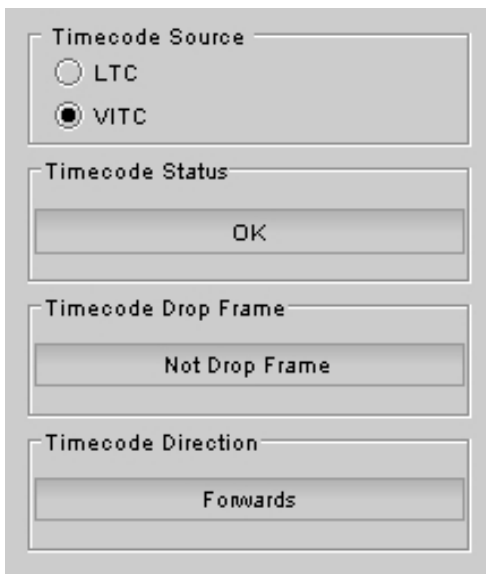
The Preferred Reference Source group contains a radio-button selection between “Auto” and “URS”. This is equivalent to the SETUP > REFERENCE > URS front panel menu.

The reference that is actually used by the system depends on what signals are available at any time. The possible reference options and the choice logic are described in more detail in section 4.4.1.

6.4.6 Timecode

The Timecode panel allows the timecode source to be selected and shows details of the timecode status.

Details of timecode support for LGK-3901/DSK-3901 are listed section 4.13



The Timecode Source group allows the LTC or VITC timecode to be chosen. This is equivalent to the SETUP > TIMECODE > TIMECODE SOURCE front panel menu selection.

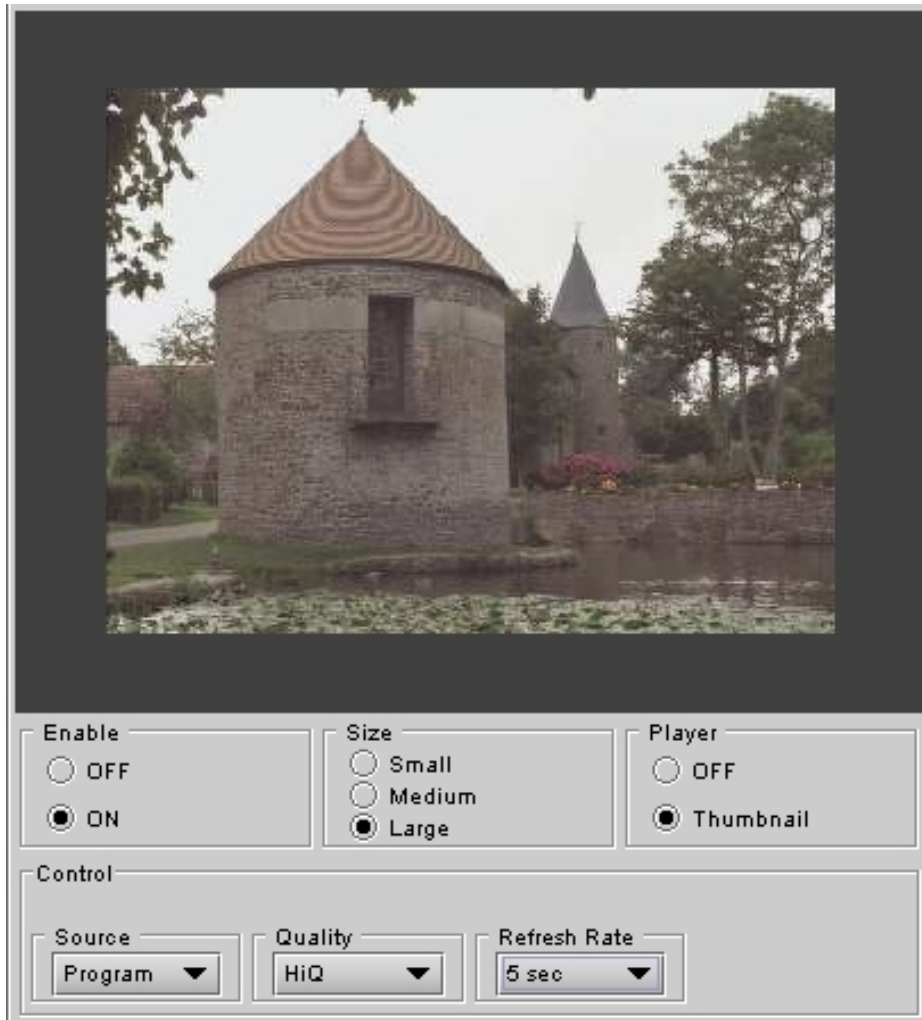
Timecode Status shows if the selected source is valid or invalid.

Timecode Drop Frame shows if the selected source is drop frame or not

Timecode Direction shows if the source is running forwards or backwards

6.4.7 Monitoring

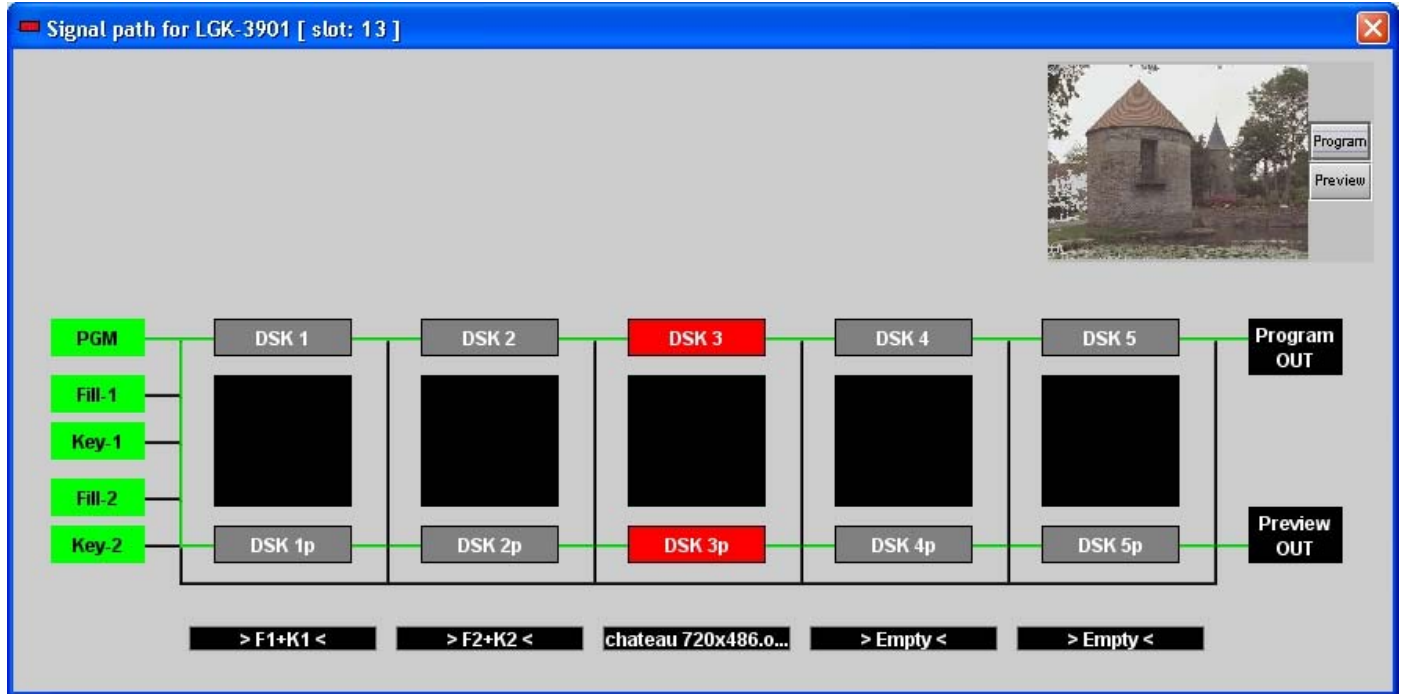
The Monitoring panel allows the physical output transmitted as PGM OUT or PVW OUT to be monitored via a thumbnail that is generated internally by the LGK-3901/DSK-3901.



When thumbnails are enabled, their source, size, quality and refresh rate may be modified from this panel.

6.4.8 Show Signal Path

The Show Signal Path (non-modal) dialog monitors details of the Program and Preview video chains of the LGK-3901/DSK-3901 including routing, keying position, media loaded and physical output via a thumbnail.



Features of this dialog are:

- Preview routing depends on the Preview/ Mix B Input and Preview Output settings (sections 4.9.1 and 6.4.3).
- When keyers on the Program and Preview chains are cut up they appear red.
- Media that is loaded into a store associated with any keyer is listed by filename.
- When an external fill and key is associated with a keyer this appears as "> F1+K1 <" or "> F2+K2 <".
- When there is no media or external fill and key associated with a keyer this appears as "> Empty <".
- If enabled, the video thumbnail from the Thumbnail panel (see section 6.4.7) is also shown.

6.4.9 Web Page

The Web Page button launches the LGK-3901/DSK-3901 web interface. This provides many additional control and monitoring features that are described in detail in section 8.

6.4.10 Test

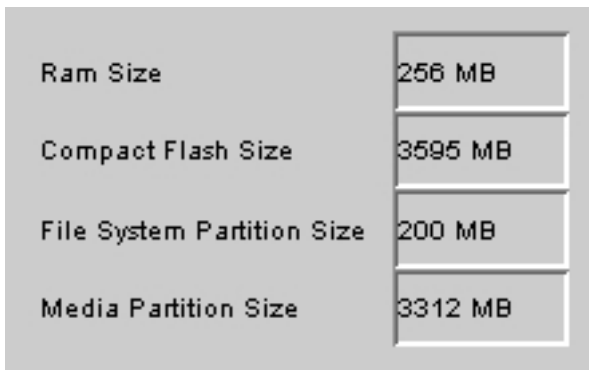
The Test panel provides a single checkbox control for forcing a test pattern to be output directly to PGM OUT and PVW OUT. This is useful when commissioning an LGK-3901/DSK-3901 with unverified or missing input signals.

When the checkbox is selected, the Operation Mode icon changes to show the yellow TEST icon (see section 6.4.1)



6.4.11 Hardware Config

The Hardware Config panel displays hardware information relating to the LGK-3901/DSK-3901.



6.4.12 Options

The Options panel shows the options that have been purchased for this card. A tab is presented for each possible option providing a description of the option plus whether it is activated or not.



The following options are available for the LGK-3901 as described in section 9.1

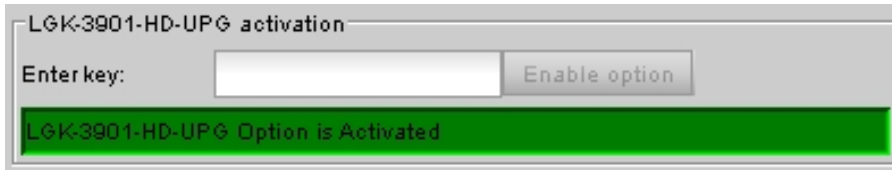
Option Name	Description	Section
LGK-3901-SD	LGK-3901 (SD + 4GB Compact Flash + 2GB Stores + Preview)	9.1.1
LGK-3901-HD-UPG	Upgrade to 3G/HD/SD video standards	9.1.2
LGK-3901-OPT-TXT	Easytext + Bugclock	9.1.3
LGK-3901-8GB-UPG	8GB Compact Flash	9.1.4
LGK-3901-OPT-AUD	Audio mix engine + AES/SDI voice-overs + Easyplay (version 3.1)	9.1.5
LGK-3901-OPT-ABMIX	AB video mixer	9.1.6
LGK-3901-OPT-EAS	Emergency Alert System (EAS)	9.1.7
LGK-3901-OPT-TEMP	Temperature Probe	9.1.8

The following options are available for the DSK-3901 as described in section 9.2.

Option Name	Description	Section
DSK-3901-SD	DSK-3901 (SD + 4GB Compact Flash + Preview)	9.2.1
DSK-3901-HD-UPG	Upgrade to 3G/HD/SD video standards	9.2.2
LGK-3901-SD	Upgrade to LGK-3901-SD	9.2.3
DSK-3901-OPT-AUD	Audio mix engine + AES/SDI voice-overs	9.2.4
DSK-3901-OPT-ABMIX	AB video mixer	9.2.5

To activate an option:

- Purchase the appropriate activation key from Miranda Technologies Inc.
- Enter the activation key into the “Enter key” data box
- Click the Enable Option button
- Restart the LGK-3901/DSK-3901



6.4.13 Alarm Config

The Alarm panel allows the alarm reporting of the LGK-3901/DSK-3901 to be configured. The panel opens in a new dialog window when the button is clicked, and can be resized if needed.

Status / Name	Card LED	Overall alarm	GSM contribution	Log events
LGK-3901	Set all	Set all	Set all	<input checked="" type="checkbox"/>
External Reference	Set all	Set all	Set all	<input checked="" type="checkbox"/>
Unlocked	Minor	Disabled	Disabled	<input checked="" type="checkbox"/>
Mismatch	Critical	Disabled	Disabled	<input checked="" type="checkbox"/>
PGM In Input	Set all	Set all	Set all	<input checked="" type="checkbox"/>
Video Input Loss	Critical	Disabled	Disabled	<input checked="" type="checkbox"/>
Video Input Mismatch	Critical	Disabled	Disabled	<input checked="" type="checkbox"/>
Video Input Timing	Critical	Disabled	Disabled	<input checked="" type="checkbox"/>
Fill-1 Input	Set all	Set all	Set all	<input checked="" type="checkbox"/>
Video Input Loss	Minor	Disabled	Disabled	<input checked="" type="checkbox"/>
Video Input Mismatch	Critical	Disabled	Disabled	<input checked="" type="checkbox"/>
Video Input Timing	Critical	Disabled	Disabled	<input checked="" type="checkbox"/>
Key-1 Input	Set all	Set all	Set all	<input checked="" type="checkbox"/>
Video Input Loss	Minor	Disabled	Disabled	<input checked="" type="checkbox"/>
Video Input Mismatch	Critical	Disabled	Disabled	<input checked="" type="checkbox"/>
Video Input Timing	Critical	Disabled	Disabled	<input checked="" type="checkbox"/>
Fill-2 Input	Set all	Set all	Set all	<input checked="" type="checkbox"/>
Video Input Loss	Minor	Disabled	Disabled	<input checked="" type="checkbox"/>
Video Input Mismatch	Critical	Disabled	Disabled	<input checked="" type="checkbox"/>
Video Input Timing	Critical	Disabled	Disabled	<input checked="" type="checkbox"/>
Key-2 Input	Set all	Set all	Set all	<input checked="" type="checkbox"/>
Video Input Loss	Minor	Disabled	Disabled	<input checked="" type="checkbox"/>
Video Input Mismatch	Critical	Disabled	Disabled	<input checked="" type="checkbox"/>
Video Input Timing	Critical	Disabled	Disabled	<input checked="" type="checkbox"/>
Overall Timing	Critical	Disabled	Disabled	<input checked="" type="checkbox"/>
Video Fade-to-Black	Disabled	Disabled	Disabled	<input checked="" type="checkbox"/>
No Rear	Critical	Disabled	Disabled	<input checked="" type="checkbox"/>
DSK 1	Set all	Set all	Set all	<input checked="" type="checkbox"/>
DSK 1 Fade Rate (50)	N/A	N/A	Disabled	<input checked="" type="checkbox"/>
DSK 1 Arm Mode	N/A	Disabled	Disabled	<input checked="" type="checkbox"/>
DSK 1 Active	N/A	Disabled	Disabled	<input checked="" type="checkbox"/>
DSK 1 In Transition	N/A	Disabled	Disabled	<input checked="" type="checkbox"/>
DSK 2	Set all	Set all	Set all	<input checked="" type="checkbox"/>
DSK 3	Set all	Set all	Set all	<input checked="" type="checkbox"/>
DSK 4	Set all	Set all	Set all	<input checked="" type="checkbox"/>
DSK 5	Set all	Set all	Set all	<input checked="" type="checkbox"/>
Health State	Set all	Set all	Set all	<input checked="" type="checkbox"/>
Temperature Fail	Critical	Disabled	Disabled	<input checked="" type="checkbox"/>
Voltage Fail	Critical	Disabled	Disabled	<input checked="" type="checkbox"/>
Network Link	Critical	Disabled	Disabled	<input checked="" type="checkbox"/>
Compact Flash Usage	Critical	Disabled	Disabled	<input checked="" type="checkbox"/>
Card LED	N/A	Passthrough	Passthrough	<input checked="" type="checkbox"/>
Overall	N/A	N/A	Passthrough	<input checked="" type="checkbox"/>

Overall follow LED Copy to other cards

OK Apply Cancel Get alarm keys

The panel is organized into the following columns:

- Status/Name
- Card LED
- Overall alarm
- GSM contribution
- Log events

6.4.13.1 Status/Name

This contains an expandable tree view of all alarms reported by the LGK-3901/DSK-3901 card. Each alarm name includes an icon that shows its current status.

Each of the individual alarms listed in the Status/Name column can contribute to bulk alarms in the other columns.

6.4.13.2 Card LED

The Card LED column contains pull-down lists that allow the operator to set the level of contribution of each individual alarm to the card-edge status LED alarm (see section 6.2) for the LGK-3901/DSK-3901.

6.4.13.3 Overall Alarm

This Overall Alarm column contains pulldown lists that allow the operator to set the level of contribution of each individual alarm to the overall alarm for the LGK-3901/DSK-3901.

The overall alarm is shown in the upper left corner of the iControl panel and also appears at the bottom of the Status/Name column.

6.4.13.4 GSM Contribution





The GSM Contribution column contains pulldown lists that allow the operator to set the level of contribution of each individual alarm to the GSM alarm status associated with the LGK-3901/DSK-3901.

GSM is a dynamic register of all iControl system alarms, and is also an alarm provider for external applications. The possible values for this contribution are related to the Overall alarm contribution:

- If the Overall alarm contribution is selected as Disabled, the GSM alarm contribution can be set to any available value
- If the Overall alarm contribution is selected as any level other than Disabled, the GSM contribution is forced to follow the Overall Alarm.

6.4.13.5 Levels Associated With Alarms

The pull-down lists may contain some or all of the following options:

 Disabled ▼	The alarm makes no contribution (black icon)
 Minor ▼	The alarm is of minor importance (yellow icon)
 Major ▼	The alarm is of major importance (orange icon)
 Critical ▼	The alarm is of critical importance (red icon)

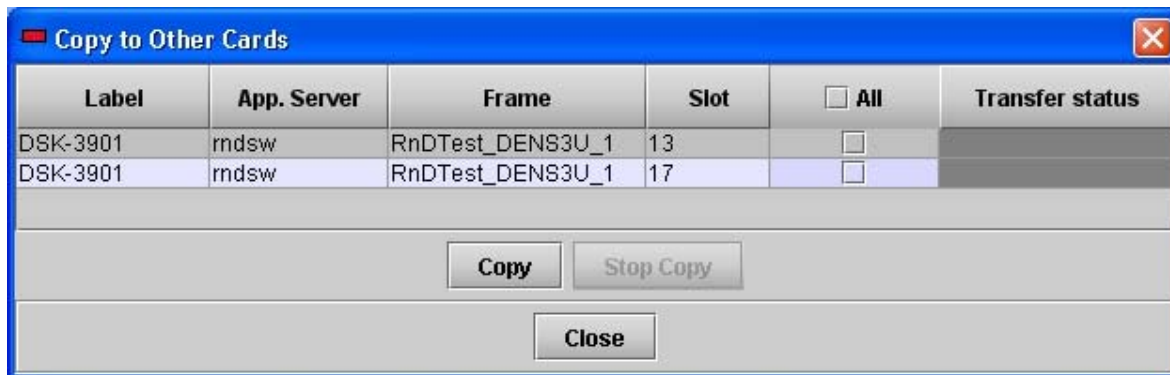
Note: If you click in a column to the right of a major heading in the Status/Name column (where “Set all” is shown), you will open a pulldown menu that lets you assign a level to all alarms in that section of the column simultaneously.

6.4.13.6 Log Events

iControl maintains a log of alarm events associated with the card. The log is useful for troubleshooting and identifying event sequences. Click in the checkbox to enable logging of alarm events for each individual alarm.

6.4.13.7 Copy To Other Cards

This button opens a new dialog window that allows the alarm configuration for this card to be copied to other LGK-3901/DSK-3901 cards.



Select one or more destination cards from the list by clicking in the appropriate checkboxes, or all of them by clicking in the All checkbox

6.4.13.8 Get Alarm Keys



This button opens a save dialog from where the operator can save a file containing a list of all alarms on this card and their current values. The file is saved in Microsoft Excel .CSV format.

The alarm keys are useful for system integration and troubleshooting.

6.4.13.9 OK, Apply, Cancel

These buttons appear at the foot of the Alarm Configuration panel.

- OK
 - Accepts the new Alarm Configuration settings.
 - Closes the window once the card confirms that there are no errors.
- Apply
 - Accepts the new Alarm Configuration settings
 - Leaves the window open.
- Cancel
 - Closes the window without applying any changes.
 - Previous settings remain unchanged.

6.4.14 Info

Information about the LGK-3901/DSK-3901 card is viewed via the Info panel. The grey entries are read-only, but white entries can be edited by the operator in order to help identify the card within a complex system.

Rear Type	3U (3DRP_R)
Label:	LGK-3901
Short label:	LGK-3901
Source ID:	
Device type:	LGK-3901
Comments:	3G/HD/SD Logo Inserter/Downstream Keyer
Manufacturer:	Miranda Technologies Inc.
Vendor:	Miranda Technologies Inc.
Service version:	1.00
	Details...
Advanced...	Remote system administration...

The operator can edit the following strings:

- Label The label of the LGK-3901/DSK-3901 when it appears in iControl applications
- Short Label A short label (limited to 8 characters) that iControl uses in some cases
- Source ID A descriptive name for this LGK-3901 or DSK-3901
- Comments Any comments required for the card

7 Configurator Tool

The LGK-3901/DSK-3901 is configured via the Configurator Tool version 1.2 (or higher). This Windows-based application allows the user to control the start-up state of LGK-3901/DSK-3901. The card will then always restart in a known state.

The Media Conversion Suite (MCS) CD that ships with LGK-3901/DSK-3901 contains a copy of the Configurator Tool software.

7.1 Opening a Configuration

The validity of any configuration file depends critically on the hardware device capabilities of the LGK-3901/DSK-3901 and the software options that are currently installed. This is defined via a Capabilities File, which is always generated by a running card. It may also be saved as a local file (see section 7.9).

Note: This section is related to the USER PRESETS front panel menu which is described in section 4.15.

After executing the Configurator Tool a configuration should be opened. This can either be a new (default) configuration, or an existing configuration from a card or local file. This is done via the File menu as follows:

- File > New > From Device...
 - Creates a new (default) configuration based on device capabilities from a running card.
- File > New > From File...
 - Creates a new (default) configuration based on device capabilities from a local file.
- File > Open > From Device...
 - Opens an existing configuration from a running device.
 - This may either be the “active configuration” or a configuration saved on the card (section 4.15.2).
- File > Open > Advanced...
 - Opens an existing configuration either from the running device or from a local file.
 - This is validated against the device capabilities either from a running device or from a local file.

Note: The “active configuration” is the current state of the card.

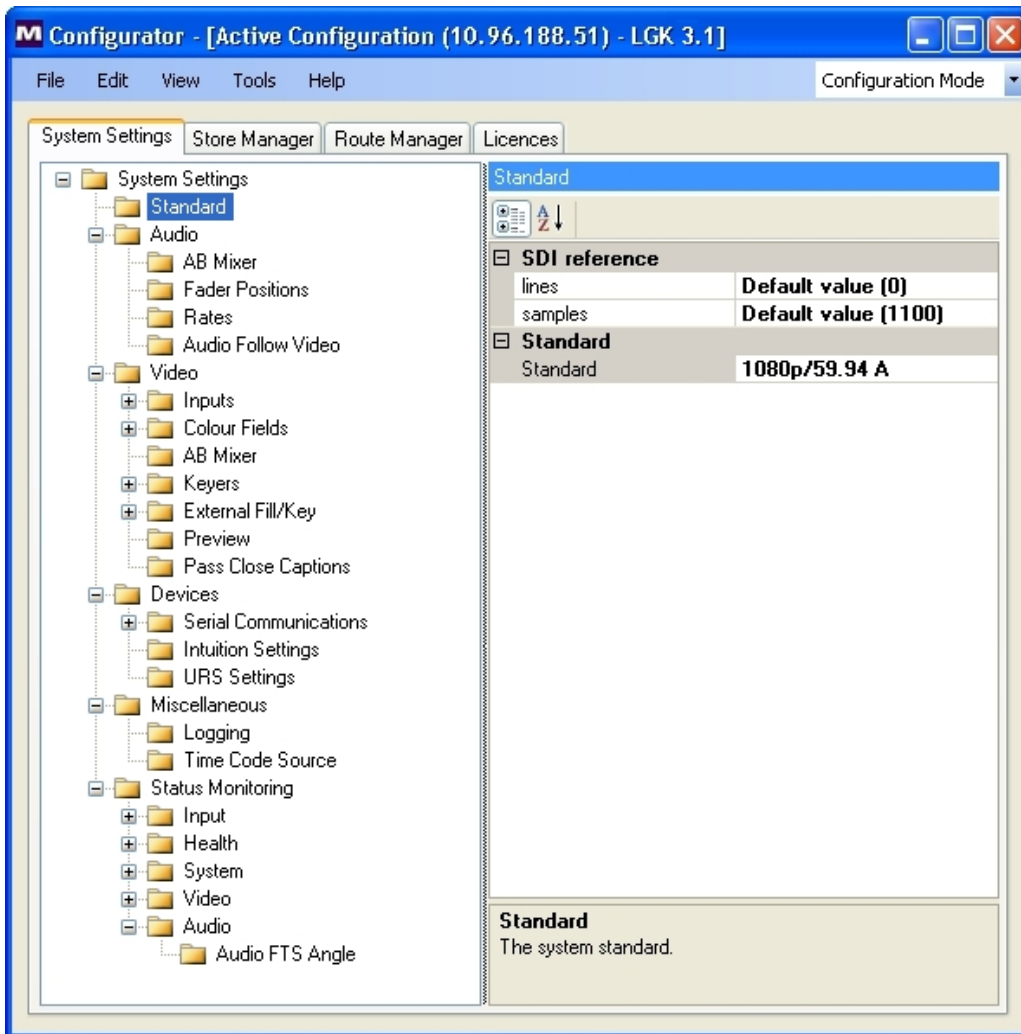
During commissioning the front panel will often be used to define the majority of settings on LGK-3901/DSK-3901. The current state (or “active configuration”) can then be opened into the Configurator Tool in order to tweak particular system settings (see section 7.2).

7.2 System Settings

The System Settings tab is used to view and edit a configuration once it is opened inside the Configurator Tool. The left-hand pane contains entries for the following groups of main features:

- Standard
- Audio
 - AB Mixer
 - Fader Positions
 - Rates
 - Audio Follow Video

- Video
 - Inputs
 - Color Fields
 - AB Mixer or Routing
 - Keyers
 - External Fill/Key
 - Preview
 - Pass Close Captions
- Devices
 - Serial Communications
 - Intuition Settings
 - URS Settings
- Miscellaneous
 - Logging
 - Time Code Source
- Status Monitoring
 - Input
 - Health
 - System
 - Video
 - Audio



The menu tree may be expanded wherever a [+] is seen to reveal sub-menu options. Individual system settings for the current configuration are then selected and modified in the right-hand pane. Whenever a setting is clicked, a description of the feature appears below it as a guide. This includes the corresponding automation command, which can be cross-referenced against the Oxtel Series Automation Protocol document (version 15 or higher).

System settings can be split up into two categories:

- Persistent Settings from the SETUP and CONFIG ALARMS front panel menus.
- Volatile Settings from the OPERATE menu.

Persistent settings are options such as the serial port baud rate (SETUP > SERIAL COMMS > SERIAL PORTS > COM n > BAUD RATE) which are always expected to persist once modified via the front panel. The Configurator Tool allows such values to be defined within a specific configuration; either to the factory default value or a user-defined value.

Volatile settings are options from the OPERATE menu such as keyer fader positions and media loads which may be required to be set to specific values on restart. Volatile settings may also persist if required by selecting “System value persists” for the parameter within the Configurator Tool.

The possible restart behaviours of volatile settings are as follows:

- Reset to the factory-default value
- Reset to a user-defined value
- Persist from the previous session

An example of restart behaviour for LGK-3901 is when DSK 1 to DSK 4 should be cut down, but DSK 5 should be cut up with the station logo loaded. This may be achieved as shown in the following figures:

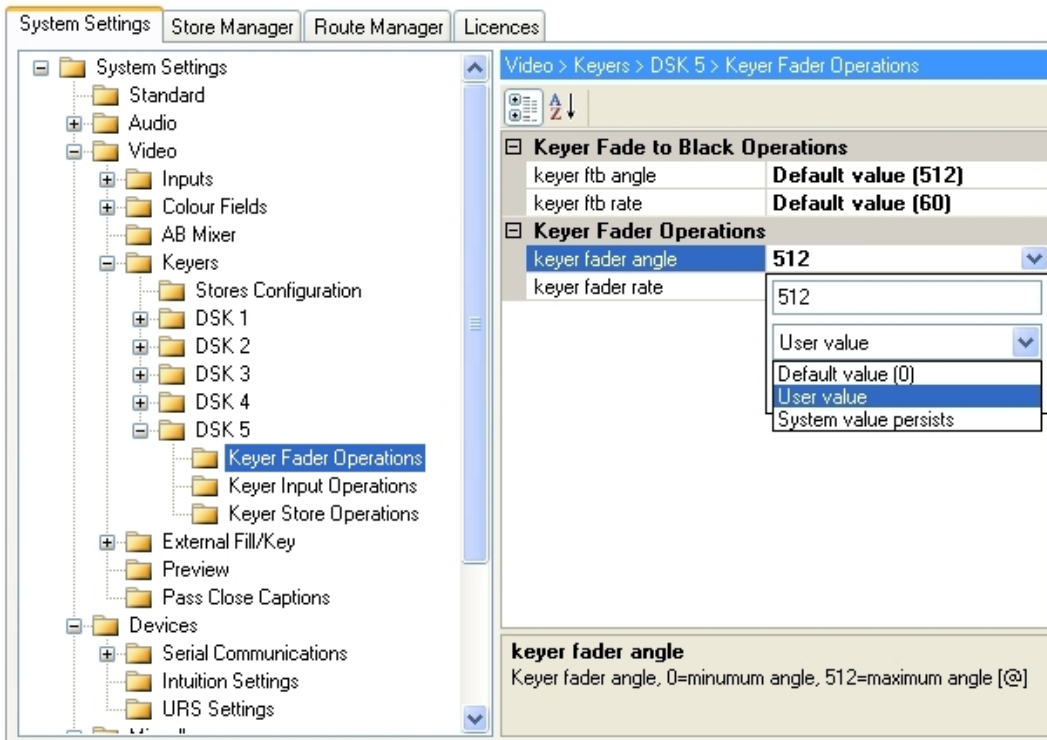


Figure 7.1 Forcing DSK 5 to be cut up on a restart (keyer fader angle = 512)

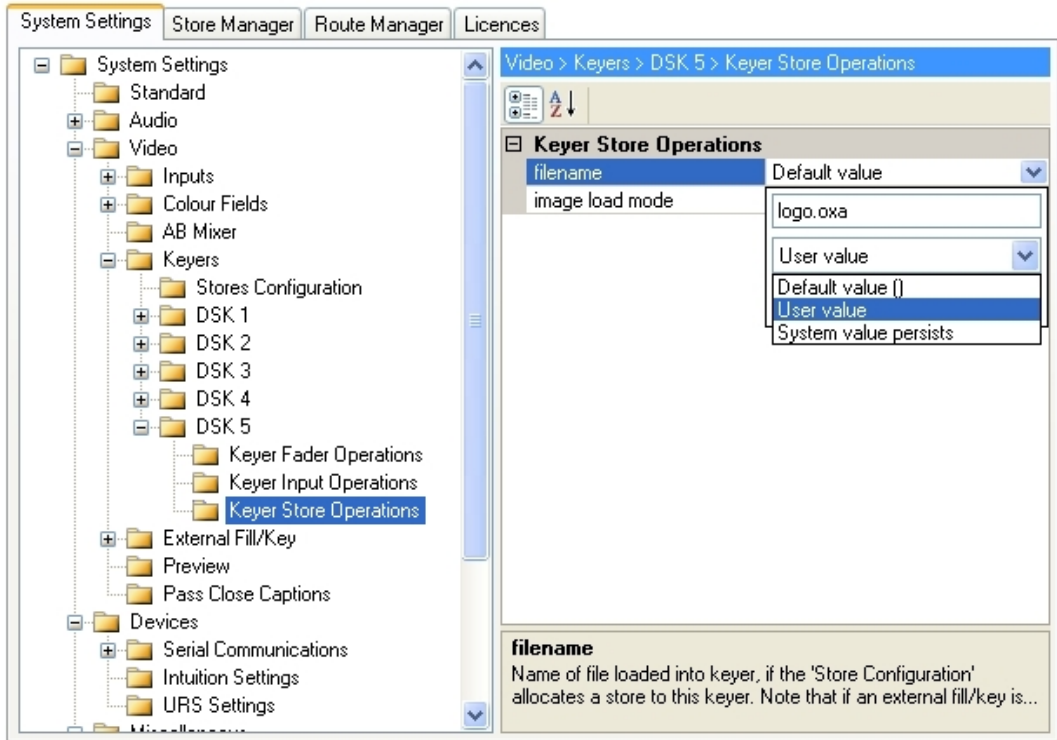
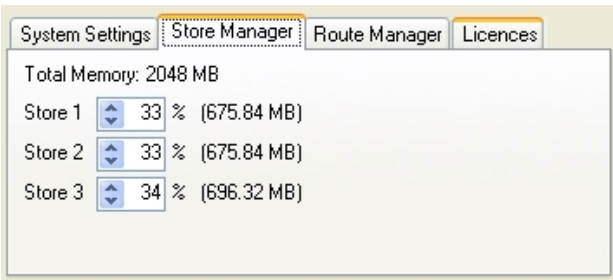


Figure 7.2 Forcing station logo animation (logo.oxa) to be loaded into DSK5 on a restart

7.3 Store Manager

This applies to LGK-3901 only.

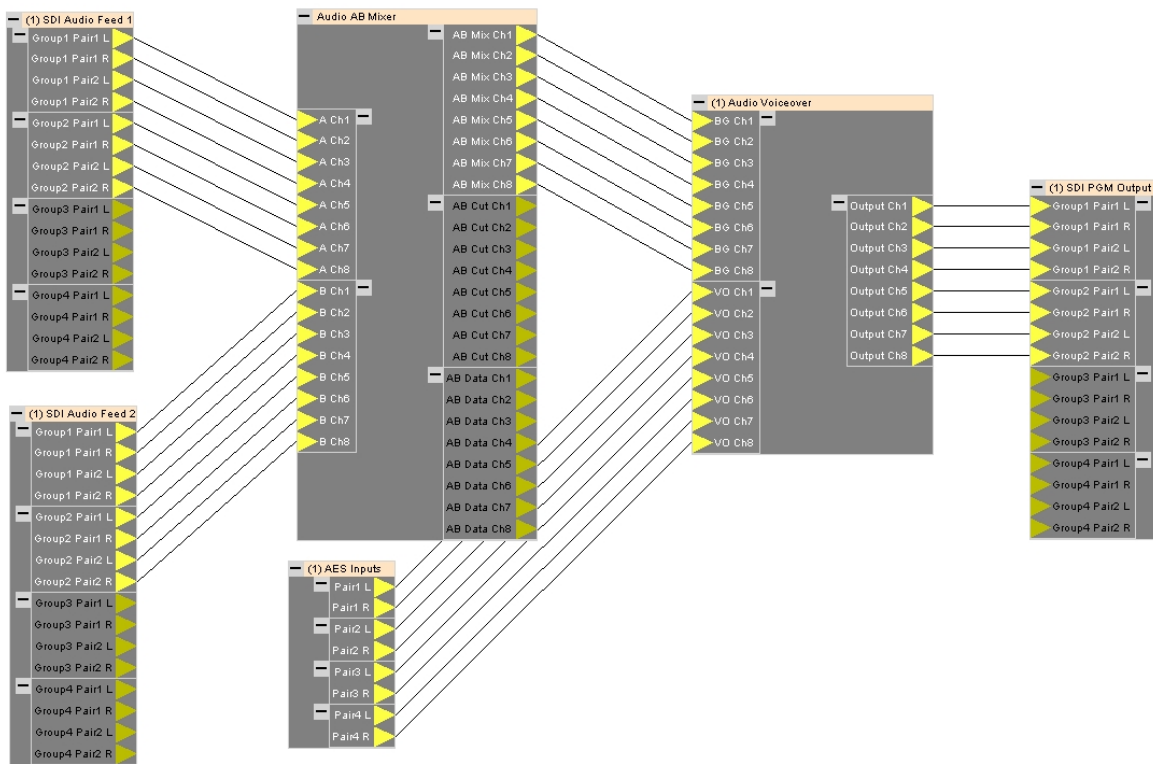
The Store Manager tab allows the total store memory to be allocated to the three available stores on a percentage basis. This allows more store memory to be allocated to a specified layer that will be used for playing out long animations. The factory default is for all stores to be equally allocated.



7.4 Route Manager

Note: The Audio Route Manager requires the audio option (LGK-3901-OPT-AUD or DSK-3901-OPT-AUD) to be enabled and the software to be at version 3.0 or higher.

The Route Manager tab is used to graphically define all routing within the audio mix engine. This is achieved by the user dragging audio blocks onto the Audio Route Manager view and connecting up appropriate pins between input mixer, delay and output blocks.



A range of different example route manager templates are supplied as starting points for creating custom audio setups. These are described in detail via the LGK-3901/DSK-3910 Web Page (see section 8.7).

The following audio block types are supported by LGK-3901/DSK-3901:

- Inputs (section 7.4.1)
- Audio Mix Blocks (section 7.4.2)
- Audio Delay Banks (section 7.4.3)
- Outputs (section 7.4.4)

7.4.1 Inputs

The input blocks define all possible audio sources for the system. The following blocks are supported:

Block Type	Description
SDI Audio Feed	Represents an embedded SDI audio input feed. Two feeds are supported, each with 16 channels of audio. Each feed can be set to follow the video AB mixer A or B input (requires AB mixer option). Alternatively the source can be fixed to PGM IN, FILL-1 or FILL-2
AES Inputs	Represents the physical AES inputs on the device. There are 4 AES pairs giving a total of 8 input audio channels
Easyplay (LGK-3901 only)	Represents an Easyplay stream for playing out audio clips. Two Easyplay streams are provided sharing a total of 8 audio channels. Each stream can be instructed to follow corresponding video layer cuts, fades, loads and unloads using a filename association and optional filename prefix. Each stream can be configured with an associated voice-over that is cut up automatically whenever an Easyplay file is playing out.
Silence	Provides an input with a silence on it
Test Tone	Provides an input with a test tone on it, the frequency of which can be modified.

7.4.2 Audio Mix Blocks

The audio mix blocks define all possible methods for mixing audio sources together. The following blocks are supported, all of which support mixing of streams up to 48 channels wide:

Block Type	Description
Audio AB Mixer	Provides AB mix, AB cut and AB data cut between two input sources – (requires AB mixer option).
Audio Mix	Provides custom mixing of up to 8 input sources
Audio Voiceover	Provides a voiceover onto background audio, ducking the background appropriately. Gain presets (see section 0) and shuffle presets (see section 7.6) may be used for the voiceover input, and fade rate, duck level and preset level may be set in dB.
Audio Voiceover Preview	Provides preview of voiceover of shuffle sensitive, gain adjusted voiceover channels
Audio Gain	Allows audio sources to be attenuated at a specific level in dB with per-channel control.
Audio Input Program Gain	Provides gain modification via gain presets (see section 0) or the j0 automation commands. The j011 (mute), j012 (trim), j013 (phase) and j014 (level) can be used to control up to 16 channels.
Audio Input Program Shuffler	Provides shuffles via shuffle presets (see section 7.6) or the j0 automation commands. The j010 command can be used to shuffle up to 16 channels.
Audio Input Program Multiplexor	Provides multiplexing of several sources of audio onto a single output. This is useful for monitoring different audio sources on the same audio output.
Audio Input Preset Gain	Provides gain modification via gain presets (see section 0) or the j0 automation commands. The j031 (mute), j032 (trim), j033 (phase) and j034 (level) can be used to control up to 16 channels.

Audio Input Preset Shuffler	Provides shuffles via shuffle presets (see section 7.6) or the j0 automation commands. The j030 command can be used to shuffle up to 16 channels.
Audio Input Preset Multiplexor	Provides multiplexing of several sources of audio onto a single output. This is useful for monitoring different audio sources on the same audio output.
Audio Output Program Gain	Provides gain modification via gain presets (see section 0) or the program gain automation commands. The j100 commands (Set output level), and j101 (Set output mute) will adjust the levels or mutes of channels passed through the block. The j1030 (set program output level via gain type) adjusts the master gain for the entire program output gain block. Each channel has its own gain/mute flag in addition to a master gain (i.e. they are totally independent).
Audio Output Program Shuffler	Provides the ability to perform shuffles via shuffle presets (see section 7.6) on the program output.
Audio Output Program Multiplexor	Provides multiplexing of several sources of audio onto a single output. This is useful for monitoring different audio sources on the same audio output.
Audio Output Preview Multiplexor	Provides multiplexing of several sources of audio onto a single output. This is useful for monitoring different audio sources on the same audio output.
Audio Output Meter Multiplexor	Provides multiplexing of several sources of audio onto a single output. This is useful for monitoring different audio sources on the same audio output.
Audio Fade To Silent Mix	Manipulates the audio when the fade-to-silent fader is moved. The block will ramp over the period of the FTS fader.
Audio Fade To Silent Cut	Manipulates the audio when the fade-to-silent fader is moved. The block will cut to silence at the point when the FTS fader is fully off. The cut is done over 1 field to ensure there are no clicks or squeaks in the audio.
Audio Fade To Silent Data	Manipulates the audio when the fade-to-silent fader is moved. The block will cut to silence at the point when the FTS fader is fully off. The cut is done instantaneously and will result in clicks or squeaks if used with non-data. It is intended to be used within datastreams that would otherwise be corrupted if a fade were attempted.
Audio AutoMute	Mutes the output of the block for a user-specified amount of time when the "sense" pin changes types (i.e. between PCM, Dolby-E, AC3 or non-audio).

Mixing generally requires input sources to the block to be PCM. Exceptions to this are the Audio AB Mixer, Audio Fade to Silent Data and Audio AutoMute blocks which may be used with data streams.

7.4.3 Audio Delay Blocks

There are four delay banks supported by LGK-3901/DSK-3901, each of which provides 16 channels of input and output. The delay for each bank can be set between 0 and 32767 samples (at 48KHz), equivalent to 0 to 682ms.

7.4.4 Outputs

The output blocks represent the physical outputs and metering of the LGK-3901/DSK-3901. Pins from input blocks may be routed directly to pins in output blocks, but they would normally be routed through one or more mix blocks.

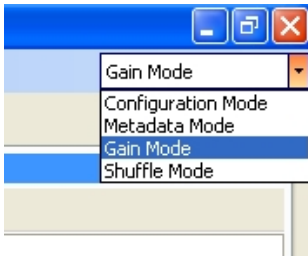
Block Type	Description
SDI PGM Output	Represents the physical PGM OUT embedded SDI output (16 channels wide). The audio type for each pair may be set to 'audio', 'non-audio' or 'automatic'. When automatic, the audio type for each pair will change if an input suddenly switched from Data to Audio (passthrough).

SDI PVW Output	Represents the physical PVW OUT embedded SDI output (16 channels wide). The audio type for each pair may be set to 'audio', 'non-audio' or 'automatic'. When automatic, the audio type for each pair will change if an input suddenly switched from Data to Audio (passthrough).
Meters	Represents the audio meters (16 channels wide)

7.5 Gain Mode

Gain Mode is used to define Gain Presets which can then dynamically adjust overall gain as-well-as level/trim/mute/phase characteristics of individual audio channels at various at different points within the audio mix.

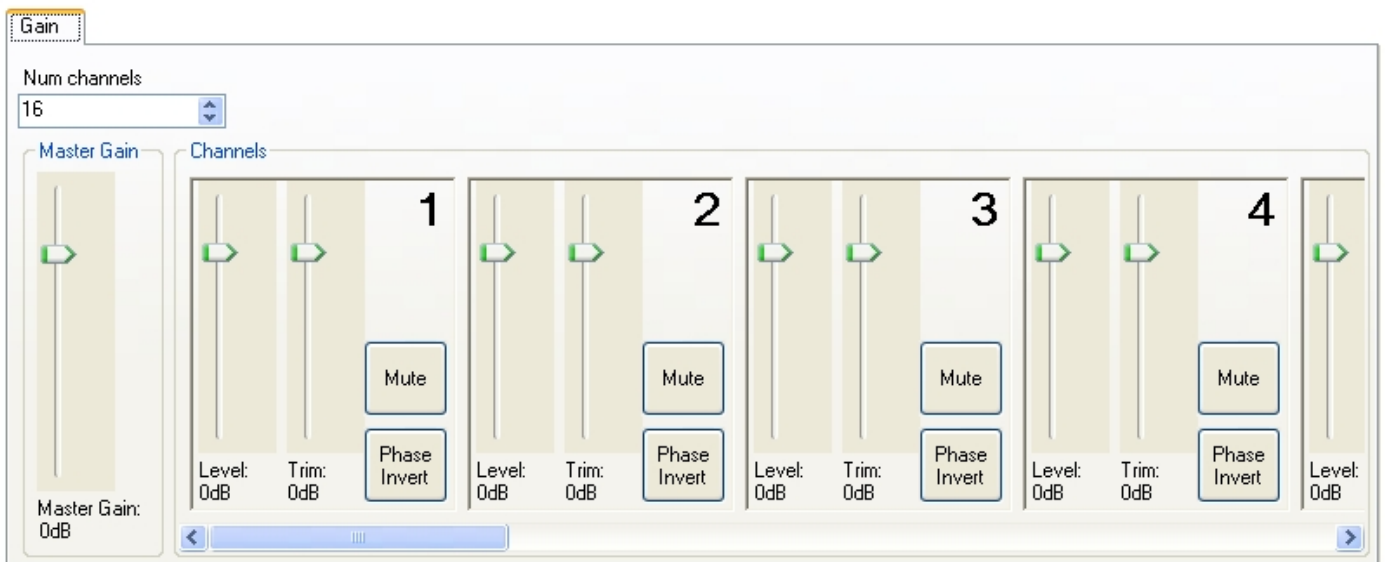
To enter Gain Mode, select it from the drop down list in the top right hand corner of the Configurator Tool.



Gain Preset files may then be created or modified by selecting 'File > New' or 'File > Open' from the application menu. The following attributes may be defined for each Gain Preset:

- Number of channels 1 to 48
- Master Gain +28dB to -100dB 0dB default
- Per-Channel Level +28dB to -100dB 0dB default
- Per-Channel Trim +28dB to -100dB 0dB default
- Per-Channel Mute
- Per-Channel Phase

The following screen shot shows a 16-channel Gain Preset with default settings.



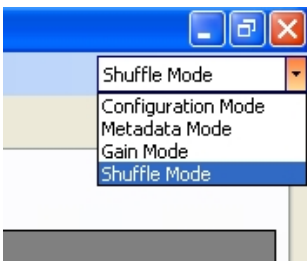
Gain Presets are then saved to the system, and utilized within various audio mixer blocks (see section 7.4.2):

- Audio Voiceover
- Audio Gain
- Audio Input Program Gain
- Audio Input Preset Gain
- Audio Output Program Gain

7.6 Shuffle Mode

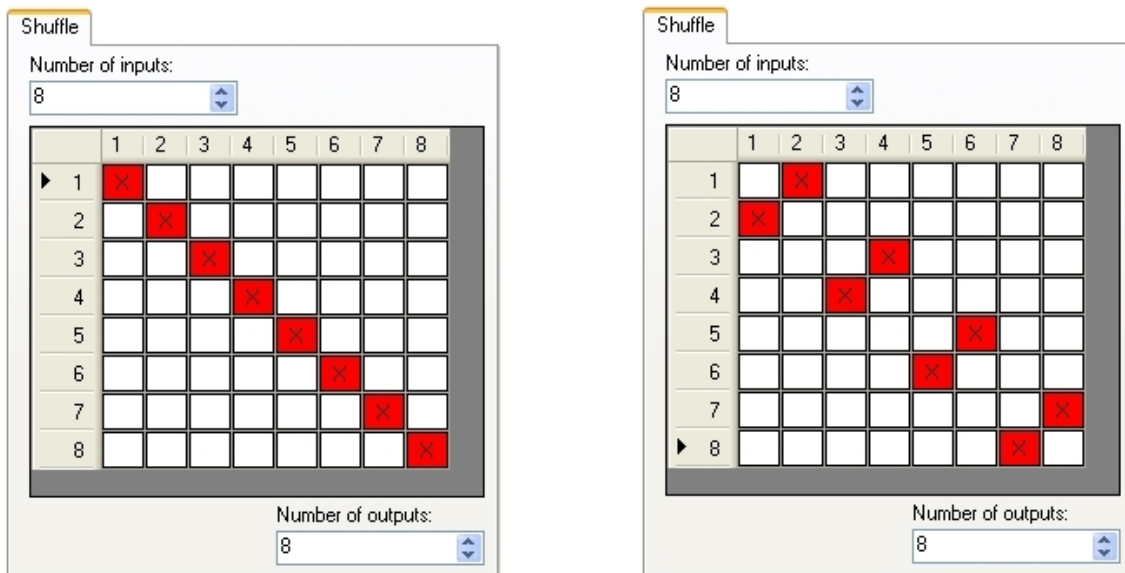
Shuffle Mode is used to define Shuffle Presets which can then dynamically adjust the channel shuffling at various points within the audio mix.

To enter Shuffle Mode, select it from the drop down list in the top right hand corner of the Configurator Tool.



Shuffle Preset files may then be created or modified by selecting 'File > New' or 'File > Open' from the application menu. The number of inputs and outputs of a Shuffle Preset can range between 1 and 48 channels.

The following screen shots show examples of 8 x 8 Shuffle Presets, one with default 1-to-1 mapping and the other with a swap of stereo pairs:



Shuffle Presets are then saved to the system, and utilized within various audio mixer blocks (see section 7.4.2):

- Audio Voiceover
- Audio Input Program Shuffler
- Audio Input Preset Shuffler
- Audio Output Program Shuffler

7.7 Licences

The Licences tab lists the Options (see section 9) that are currently enabled for the LGK-3901/DSK-3901.

Name	Value	Description
LGK-3901-OPT-EAS	0	LGK-3901-OPT-EAS
LGK-3901-OPT-TXT	0	LGK-3901-OPT-TXT
LGK-3901-OPT-AUD	0	LGK-3901-OPT-AUD
LGK-3901-SD	0	LGK-3901-SD
LGK-3901-HD-UPG	0	LGK-3901-HD-UPG
LGK-3901-OPT-TEMP	0	LGK-3901-OPT-TEMP
LGK-3901-OPT-ABMIX	0	LGK-3901-OPT-ABMIX

7.8 Saving a Configuration

Once a configuration is fine-tuned as required it can be saved back to one or more LGK-3901/DSK-3901 cards and backed up to file as necessary. This is done via the File menu as follows:

- File > Save
 - Asks the user to confirm the IP address of the card and the filename to save the configuration as.
 - Subsequent saves reuse the same IP address and filename
- File > Save As > To Device...
 - Asks the user to confirm the IP address of the card and the filename to save the configuration as.
- File > Save As > To File...
 - Allows the user to make a backup copy of the configuration.

To use a configuration that was saved from the Configurator Tool onto an LGK-3901/DSK-3901 card, select USER PRESETS > IMPORT > [filename].xml from the front panel menu and then restart the card as instructed. On restart the imported configuration becomes the “active configuration” and will persist until a different configuration is imported.

Note: If the same configuration file is imported onto cards with different Capabilities Files then each card will use its own Capabilities File to validate all configuration settings. Configuration settings that can not be supported will be ignored. Configuration settings that are not defined but are supported will take the factory default settings.

7.9 Exporting Capabilities File

As described in section 7.1 the validity of any configuration file depends critically on the hardware device capabilities of the LGK-3901/DSK-3901 and the software options that are currently installed. This is defined via a Capabilities File, which is always generated by a running card.

In order to work on configurations off-line without being connected to a running LGK-3901/DSK-3901, a local copy of a Capabilities File is required. The can be generated via the File menu as follows:

- File > Export Capabilities File

8 Web Interface

The LGK-3901/DSK-3901 incorporates its own Ethernet interface, independent from the Densité frame's interface. This is used for ingesting media files, configuration files, and for upgrading the card's software.

8.1 Connecting

The web interface can be accessed by entering the IP address³ of the unit in the location bar of a web browser. Known supported web browsers are Internet Explorer (version 7 onwards) and Mozilla Firefox (version 3 onwards).



Warning: Some features available from the LGK-3901/DSK-3901 web interface will affect operation of the unit and may result in the loss of output. Great care must be taken if the web interface is used while a unit is on-air.

8.2 Log In

After clicking on the “LOGIN” button, the user is asked for a password to access the unit.

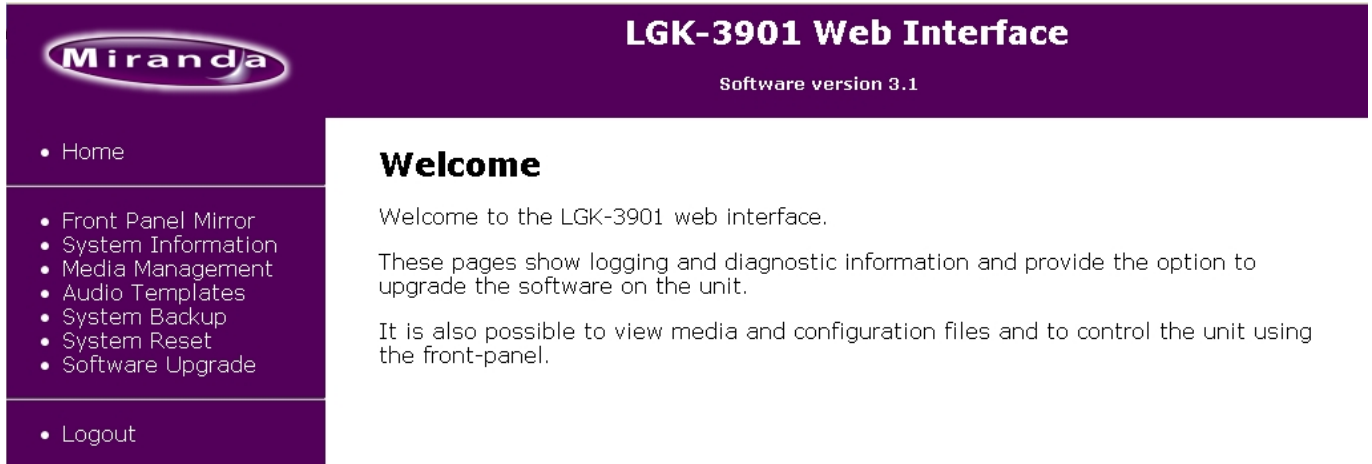
Note: The default password is “miranda”.



³ The IP address is available from the front panel menu at STATUS > SYSTEM INFO > IP ADDRESS

8.3 Home

The home page offers an introduction. Links to various other pages are available on the left-hand side of the screen. The current software version is shown at the top of the page.

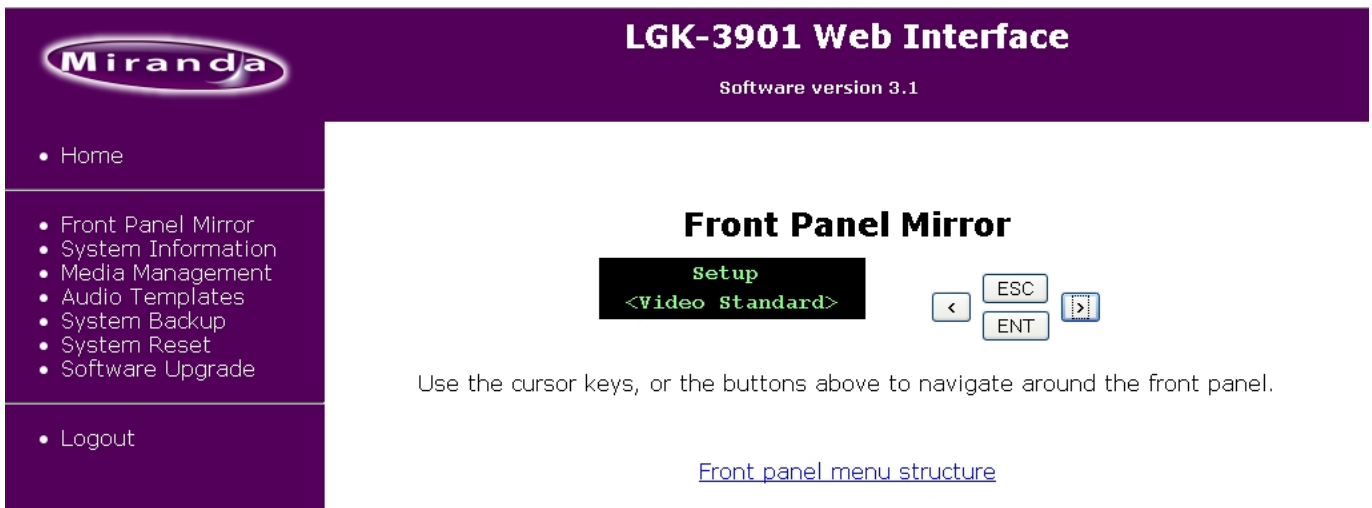


8.4 Front Panel Mirror

This page allows the user to manipulate settings of the LGK-3901/DSK-3901 from a mirror of the front-panel as if using the physical menu. This allows remote operation of the unit which is particularly useful for configuring a unit that is installed in a remote location such as a server room.

Warning: This page should be used with great care when the card is on-air since on-air output can be affected

Note: The orientation of the buttons in the front panel mirror differs to those on the Densité frame controller card.



There is also a link to view the full menu structure of this card for reference purposes. Note that all store-related menu items available in the LGK-3901/DSK-3901 menu structure will not be present for DSK-3901, and other items may depend upon installed options. See ANNEX 1 – Front Panel Menu for details.

8.5 System Information

Miranda **LGK-3901 Web Interface**
Software version 3.1

- Home
- Front Panel Mirror
- System Information
- Media Management
- Audio Templates
- System Backup
- System Reset
- Software Upgrade
- Logout

System Information

Click on the links below to view general system information.

- [Release Notes](#)
- [Licences](#)
- [Network Information](#)
- [Running Processes](#)
- [Interrupt Statistics](#)
- [Serial Configuration](#)
- [Serial Statistics](#)
- [FPGA Information](#)

Diagnostics

Click on the links below to view message logs or to create a diagnostics archive.

- [Latest Log Messages](#)
- [Full Log Messages \(current session\)](#)
- [Full Log Messages \(previous session\)](#)
- [Create Diagnostics Archive](#)

NOTE: The diagnostics archive contains a full copy of the device state, including the message logs. It should be generated at the time of any failure and supplied to Miranda Support as part of any bug report.

Device Capabilities

Click on the link below to download a copy of the device capabilities.

- [Create Device Capabilities File](#)

NOTE: The device capabilities file is be used in conjunction with the Configurator Tool when there is no physical device to connect to.

This page gives access to the following information:

System Information

- Release Notes shows the bugs claimed as fixed or new features in each release of the software.
- Licences shows the currently installed options on the unit (see section 9).
- Network Information shows technical information related to the Ethernet interface.
- Running Processes shows a list of processes currently running on the unit.
- Interrupt Statistics shows interrupt statistics for the unit.
- Serial Configuration shows how the serial ports are configured (RS232 or RS422).
- Serial Statistics shows serial port data statistics.
- FPGA Information shows firmware build date, identity and version number.

Diagnostics

- Latest Log Message shows and continually updates the most recent additions to the message log.
- Full Log Messages (current session) shows the full log message file for this boot session. If the file is very long it may take some time to complete downloading. The file will only update if the user clicks 'Refresh' on the web browser.
- Full Log Messages (previous session) shows the full log message for the last boot session. If the file is very long it may take some time to complete downloading.

- Create Diagnostics Archive will collate all system information about an LGK-3901/DSK-3901. It is intended for fault diagnosis and should always be submitted to Miranda Support after a failure with any unit before the unit is restarted. The archive file also includes the log message files.

Note: See section 4.13 for details of how to modify the amount of logging information shown in message logs.

Device Capabilities

- Create Device Capabilities File allows the user to download a copy of the LGK-3901/DSK-3901 Capabilities file. This is used to tell the Configuration Tool about the device hardware capabilities and available options. See section 7 for information on the Configurator Tool.

8.6 Media Management

This page allows the following file types to be uploaded, downloaded or deleted from the unit.

- Media Files
- Configuration Preset Files
- Active Configuration Files
- Easyplay Files (version 3.1 software)
- Gain Presets
- Shuffle Presets

Warning: This page should be used with great care when the card is on-air since on-air output can be affected

Individual media files can be downloaded directly by clicking on the name. Multiple media files can be downloaded as a single tar archive by selecting them and then clicking on the “Download Selected” button. Multiple media files can be deleted by selecting them and choosing the “Delete Selected” button. Individual media files may be uploaded onto the unit by clicking the “Browse” button followed by “Add File”.

Preset files and other configuration files may also be uploaded, downloaded and deleted in a similar manner to media files. Deleting configuration files is not recommended.

If any configuration files are replaced then a reboot is required for them to be re-read and the settings applied. This should be performed as soon as possible.

Note: This page is intended for convenience and should not be seen as a viable alternative for professional media management tools or FTP. Media transfers via the web page are likely to be slower and cope less well with large files.

Miranda **LGK-3901 Web Interface**
Software version 3.1

- Home
- Front Panel Mirror
- System Information
- Media Management
- Audio Templates
- System Backup
- System Reset
- Software Upgrade
- Logout

Media Management

Media Files

Select	Filename
<input type="checkbox"/>	TestCard.oxt

Select All Select None Download Selected Delete Selected
Add File Browse...


Configuration Preset Files

Select	Filename
<input type="checkbox"/>	20091103_151659.xml
<input type="checkbox"/>	20091110_161004.xml

Select All Select None Download Selected Delete Selected
Add File Browse...

8.7 Audio Templates

This page provides some example audio configuration templates to aid in the design of complex audio models via the Route Manager. The main features of each example template are described and all inputs, outputs, preview modes and metering points are listed.


LGK-3901 Web Interface
Software version 3.1

- Home

- Front Panel Mirror
- System Information
- Media Management
- Audio Templates
- System Backup
- System Reset
- Software Upgrade

- Logout

Audio Configuration Templates

This page provides some audio configuration templates to aid in the design of complex audio models via the Route Manager.

- [16 channel embedded AB mix](#)
- [16 channel embedded AB mix with 2 channel AES voiceover \(EAS\)](#)
- [16 channel embedded AB mix with 8 channel AES voiceover](#)
- [16 channel embedded passthrough with 2 channel AES voiceover \(EAS\)](#)
- [16 channel embedded passthrough with 8 channel AES voiceover](#)

16 channel embedded AB mix [\[Download\]](#)

Description

This configuration provides the following:

- 16 Channels of audio both SDI PGM and SDI PST fed into an AB mixer
- Full shuffle capability for both PGM and PST inputs
- Full level adjustment capability for both PGM and PST inputs
- Fade to silent capability on the PGM output
- Full level adjustment capability on the PGM output

Inputs

- 16 channels from SDI PGM used for A
- 16 channels from SDI PST used for B

Outputs

- 16 channels to SDI PGM for main program output
- 16 channels to SDI PVW for previewing
- 16 channels to metering

Preview Modes

The preview multiplexor has the following sources:

- 0 = PGM Input
- 1 = PST Input
- 2 = PGM Input post levels/shuffles
- 3 = PST Input post levels/shuffles
- 4 = AB mixer output
- 5 = PGM Copy

8.8 System Backup

This page allows a backup of Presets, Fonts and Configurations on the LGK-3901/DSK-3901 to be generated or restored back onto the unit. The backup is generated in the form of a tar archive.

To use the restore feature, click the “Browse” button and then select the backup file and click on the “Restore Media and Settings” button.

Note: System backups do not include media files which should be backed up via FTP instead.

The screenshot displays the web interface for the LGK-3901. At the top, there is a dark purple header with the 'Miranda' logo on the left and the text 'LGK-3901 Web Interface' and 'Software version 3.1' on the right. A left-hand navigation menu contains links for Home, Front Panel Mirror, System Information, Media Management, Audio Templates, System Backup, System Reset, Software Upgrade, and Logout. The main content area is divided into two sections: 'System Backup' and 'System Restore'. The 'System Backup' section includes a heading, a description of the feature, a note about excluded folders, and a 'Backup' button. The 'System Restore' section includes a heading, a description of the feature, a warning about overwriting files, a file selection input field with a 'Browse...' button, and a 'Restore' button.

Miranda

LGK-3901 Web Interface
Software version 3.1

- Home
- Front Panel Mirror
- System Information
- Media Management
- Audio Templates
- System Backup
- System Reset
- Software Upgrade
- Logout

System Backup

Presets, Fonts and Configurations

This feature allows you to generate a backup of all the presets, fonts and configuration settings on this unit. This can take some time if there are a large number of files.

NOTE: The 'images' and 'sounds' folders will not be backed up.

System Restore

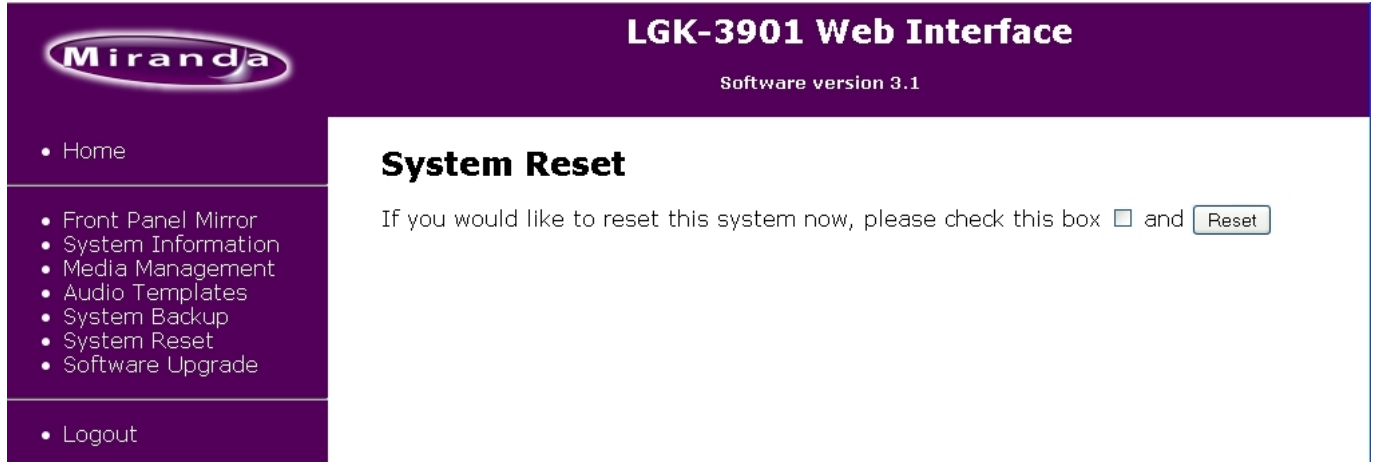
Presets, Fonts and Configurations

A previous backup of the presets, fonts and configuration settings can be restored by selecting the backup file below. This can take some time if there are a large number of files.

WARNING: Any existing files with the same name will be overwritten.

8.9 System Reset

This page allows the LGK-3901/DSK-3901 to be rebooted. This may be in order for new settings to take after changing video standard or importing a new configuration, or in the event of a software failure. The front-panel can also be used to reset the system, or the card can be re-seated in the Densité frame.



The screenshot shows the 'System Reset' page of the LGK-3901 Web Interface. The interface has a dark blue header with the 'Miranda' logo on the left and the title 'LGK-3901 Web Interface' and 'Software version 3.1' on the right. A left-hand navigation menu contains links for Home, Front Panel Mirror, System Information, Media Management, Audio Templates, System Backup, System Reset, Software Upgrade, and Logout. The main content area is titled 'System Reset' and contains the text: 'If you would like to reset this system now, please check this box and '. The 'Reset' button is a small, light blue rectangular button with rounded corners.

Warning: This option should never be used when the unit is on-air.

8.10 Software Upgrade

This page allows the software on the unit to be upgraded. There are two types of upgrades possible:

- Software Update which leaves all media and configuration settings intact
- Software Full Re-initialisation which removes the configuration files as well as the media and restores the card to its factory settings. Only the network settings will persist.

Warning: Both of these options will instantly stop the software on the unit, resulting in a loss of output.

Warning: Interrupting an upgrade by unseating the card can leave the LGK-3901/DSK-3901 completely unusable.

The screenshot shows the 'LGK-3901 Web Interface' with 'Software version 3.1'. The interface has a dark blue header with the 'Miranda' logo. A left sidebar contains a navigation menu with 'Home' and 'Logout' at the top, and a list of options: 'Front Panel Mirror', 'System Information', 'Media Management', 'Audio Templates', 'System Backup', 'System Reset', and 'Software Upgrade'. The main content area is titled 'Software Upgrade' and contains the following text: 'This function will update the software running on the system. The system will reboot automatically once the upgrade is complete.' A red warning states: 'WARNING: The update process will take several minutes. During this time the unit must NOT be powered off or it could become inoperable.' Below this, it says 'Update files can be downloaded from the [Miranda](#) website, or our [FTP site](#).' There is a form field for 'Please choose the update CPIO.GZ file :' with a 'Browse...' button. At the bottom, there is a confirmation prompt 'Are you sure?' with an unchecked checkbox and a 'Software Upgrade' button. A horizontal line separates this from the 'Software Full Re-initialisation' section, which follows the same structure: 'This function will update the software running on the system and remove all configuration settings and media. The system will reboot automatically once the upgrade is complete.' A red warning states: 'WARNING: All media and configuration settings will be lost. Please proceed with extreme caution.' Another red warning states: 'WARNING: The update process will take several minutes. During this time the unit must NOT be powered off or it could become inoperable.' It also includes the same download information, file selection form, and confirmation prompt with a 'Full Re-initialisation' button.

It may take several minutes for the update file to transfer to the unit during which time a web page message window is displayed stating that the update is under way and showing copy progress. The three LEDs on the right hand card front edge (see section 4.1.2) cycle orange from top to bottom during an upgrade as a warning that the card should not be removed from the Densité frame. When the update is complete the LEDs return to a steady state, at which point the card will restart using the new software.

If the software update appears to fail then wait at least 15 minutes before pulling out and re-inserting the card. Interrupting the update can potentially leave the card completely inoperable, meaning that it would need to be returned for repair.

9 Options

Options are used to enable the different features of the LGK-3901 and DSK-3901. These options are purchasable from Miranda Technologies Inc, and are either pre-installed with the original purchase order or updated via the iControl GUI (described in section 6.4.12).

When options are enabled, they are listed in:

- The OPTIONS menu of the front panel
- The Licences Tab of the Configurator Tool (see section 7.7)
- The Options Tab of iControl (see section 6.4.12)

9.1 LGK-3901 Options

The following LGK-3901 options are available:

Option Name	Description	Software Version
LGK-3901-SD	LGK-3901 (SD + 4GB Compact Flash + 2GB Stores + Preview)	2.1
LGK-3901-HD-UPG	Upgrade to 3G/HD/SD video standards	2.1
LGK-3901-OPT-TXT	Easytext + Bugclock	2.1
LGK-3901-8GB-UPG	8GB Compact Flash	2.1
LGK-3901-OPT-AUD	Audio Mix Engine + AES Voice-Overs (+ Easyplay)	3.0 (+ 3.1)
LGK-3901-OPT-ABMIX	AB Mixer	3.0
LGK-3901-OPT-EAS	Emergency Alert System (EAS)	3.0
LGK-3901-OPT-TEMP	Temperature Probe	3.0

9.1.1 LGK-3901-SD

This option enables insertion of up to five layers of graphics into SD-SDI video standards. Two of the five keying layers are fed by external graphics devices, and three of the five keying layers are fed by internally stored still images, animated graphics or Easytext (total store capacity is 2GB). Program and Preview outputs are supported. A 4GB Compact Flash card is included with this option for storing the operating system, software, configuration files and media files.

9.1.2 LGK-3901-HD-UPG

This option adds support for 3G and HD video standards (see section 4.3).

9.1.3 LGK-3901-OPT-TXT

This option adds support for Easytext (see section 4.8.2.4) and Bugclocks (see section 4.8.2.5).

9.1.4 LGK-3901-8GB-UPG

This option adds support for an 8GB Compact Flash card which allows extended media storage.

Note: A pre-formatted 8GB Compact Flash is provided by Miranda Technologies Inc. as part of this upgrade option.

9.1.5 LGK-3901-OPT-AUD

This option enables the audio mix engine, AES voice-overs and Easyplay clip payout (version 3.1 software) – (see sections 4.5 and 7.4).

9.1.6 LGK-3901-OPT-ABMIX

This option enables AB mixing between video sources (see section 4.6). When the audio option is also enabled AB mixing of audio streams is also permitted.

9.1.7 LGK-3901-OPT-EAS

This option enables the Emergency Alert System text and stereo voice-over to be automatically inserted (USA-only) – (see section 4.8.3)

9.1.8 LGK-3901-OPT-TEMP

This option enables a Temperature Probe to supply local temperature information via a serial port and to display this information via an Easytext templates (see section 4.8.4).

9.2 DSK-3901 Options

The following DSK-3901 options are available:

Option Name	Description	Software Version
DSK-3901-SD	DSK-3901 (SD + 4GB Compact Flash + Preview)	2.1
DSK-3901-HD-UPG	Upgrade to 3G/HD/SD video standards	2.1
DSK-3901-UPG	Upgrade to LGK-3901 Logo Inserter	2.1
DSK-3901-OPT-AUD	Audio Mix Engine + AES Voice-Overs	3.0
DSK-3901-OPT-ABMIX	AB Mixer	3.0

9.2.1 DSK-3901-SD

This option enables insertion of two layers of graphics into SD-SDI video standards. The two keying layers are fed by external graphics devices. Program and Preview outputs are supported. A 4GB Compact Flash card is included with this option for storing the operating system, software and configuration files.

9.2.2 DSK-3901-HD-UPG

This option adds support for 3G and HD video standards (see section 4.3).

9.2.3 DSK-3901-UPG

This option converts a DSK-3901 into an LGK-3901. In addition to the software option, store memory is also fitted as part of this upgrade. See section 4.5 for the location of the store memory.

9.2.4 DSK-3901-OPT-AUD

This option enables the audio mix engine and AES voice-overs – (see sections 4.5 and 7.4).

9.2.5 DSK-3901-OPT-ABMIX

This option enables AB mixing between video sources (see section 4.6). When the audio option is also enabled AB mixing of audio streams is also permitted.

10 Specifications

PROGRAM AND FILL/KEY INPUTS

SIGNAL:	3G/HD/SD-SDI SMPTE 424M, 292M and 259M-C compliant Supports data rates of 270, 1483.5, 1485, 2967, 2970 Mbps
CABLE LENGTH ⁴ :	60 m (180') @ 3 Gbps 120 m (360') @ 1.5 Gbps 300 m (1000') @270 Mbps
RETURN LOSS:	> 15 dB for up to 1.5 GHz > 10 dB from 1.5 GHz to 3 GHz Return loss figures may differ when signal is routed through the bypass relay

PROGRAM AND FILL/KEY INPUTS

SIGNAL:	3G/HD/SD-SDI SMPTE 424M, 292M and 259M-C compliant Supports data rates of 270, 1483.5, 1485, 2967, 2970 Mbps
RETURN LOSS:	> 15 dB for up to 1.5 GHz > 10 dB from 1.5 GHz to 3 GHz Return loss figures may differ when signal is routed through the bypass relay
JITTER (WIDEBAND):	< 0.2UI p-p

REFERENCE INPUT

SIGNAL:	SMPTE 170M / SMPTE 318M / ITU 624-4 / BUT 470-6 or Comp.Sync SMPTE 274M / SMPTE 296M Tri-Level Sync
RETURN LOSS:	> 35 dB up to 5.75 MHz

SERIAL CONTROL

CONNECTOR:	RJ-45
SIGNAL:	RS-232 / RS-442
DATA RATE:	9600, 1920, 38400, 57600, 76800, 115200

VIDEO PROCESSING PERFORMANCE

SIGNAL PATH:	10 bits
--------------	---------

EMBEDDED AUDIO PROCESSING PERFORMANCE

QUANTIZATION:	20-24 bits
SAMPLING:	48 KHz, synchronous
NUMBER OF CHANNELS:	16, 4 Groups

⁴ BELDEN 1694A

ELECTRICAL

POWER: 25 W

STORAGE

COMPACT FLASH Offered in 4GB and 8GB versions

ANNEX 1 – Front Panel Menu

The structure of the LGK-3901 and DSK-3901 front panel menus for v3.1 software is shown in the following table.

Front Panel Menu Name	LGK	DSK	Description
STATUS	☺	☺	
GENERAL STATUS	☺	☺	General system status
BACKPLANE	☺	☺	"LGK-3901-3DRP-R", "DSK-3901-3DRP-R" or "No Rear"
TEMPERATURE	☺	☺	Temperature of the FPGA
FPGA 1.0V	☺	☺	Voltage of the 1.0V supply rail
FPGA 2.5V	☺	☺	Voltage of the 2.5V supply rail
FPGA 3.3V	☺	☺	Voltage of the 3.3V supply rail
TIMECODE STATUS	☺	☺	"LTC" or "VITC" if valid TC is present; otherwise "BAD-Internl" "DF" for dropframe; "ND" for no dropframe "Fwd" or "Bwd" shows LTC direction
TIMECODE TIME	☺	☺	"Ext" if valid external time code; "Int" if using internal clock
REF STATUS	☺	☺	
REF SOURCE	☺	☺	[4.4] "URS" if locked to REF-1801 card; "External Ref" if locked to EXT REF; "SDI PGM In" if locked to PGM IN; "Free Running" otherwise.
URS MODE	☺	☺	"URS 25", "URS 29.97", "Free Running", "URS No Ext Ref", or "Not Present"
EXT REFERENCE	☺	☺	
EXT REF STATUS	☺	☺	"Locked" if the external reference is valid; "Unlocked" if missing
EXT STANDARD	☺	☺	"625 Line", "525 Line", "1080i/59.94", "1080i/50", "720p/59.94", "720p/50", "1080p/59.94 A", "1080p/50 A", "1080p/59.94 B", "1080p/50 B" or "Unknown" if not present
INPUT STATUS	☺	☺	
PGM INPUT	☺	☺	
VIDEO STANDARD	☺	☺	"625 Line", "525 Line", "1080i/59.94", "1080i/50", "720p/59.94", "720p/50", "1080p/59.94 A", "1080p/50 A", "1080p/59.94 B", "1080p/50 B" or "Unlocked" if signal is not present
INPUT TIMING	☺	☺	Input timing relative to the Program Output in lines/samples; "Input Unlocked" if video signal is not present
FILL-1 INPUT	☺	☺	
VIDEO STANDARD	☺	☺	See "PGM Input" (above)
INPUT TIMING	☺	☺	See "PGM Input" (above)
KEY-1 INPUT	☺	☺	
VIDEO STANDARD	☺	☺	See "PGM Input" (above)
INPUT TIMING	☺	☺	See "PGM Input" (above)
FILL-2 INPUT	☺	☺	
VIDEO STANDARD	☺	☺	See "PGM Input" (above)
INPUT TIMING	☺	☺	See "PGM Input" (above)
KEY-2 INPUT	☺	☺	
VIDEO STANDARD	☺	☺	See "PGM Input" (above)
INPUT TIMING	☺	☺	See "PGM Input" (above)
AUDIO FEED 1	☺	☺	
CHANNEL 1	☺	☺	"PCM", "Non-PCM" or "Unlocked"
CHANNEL 2	☺	☺	"PCM", "Non-PCM" or "Unlocked"
CHANNEL 3	☺	☺	"PCM", "Non-PCM" or "Unlocked"
CHANNEL 4	☺	☺	"PCM", "Non-PCM" or "Unlocked"
CHANNEL 5	☺	☺	"PCM", "Non-PCM" or "Unlocked"
CHANNEL 6	☺	☺	"PCM", "Non-PCM" or "Unlocked"
CHANNEL 7	☺	☺	"PCM", "Non-PCM" or "Unlocked"
CHANNEL 8	☺	☺	"PCM", "Non-PCM" or "Unlocked"

Front Panel Menu Name	LGK	DSK	Description
CHANNEL 9	☺	☺	"PCM", "Non-PCM" or "Unlocked"
CHANNEL 10	☺	☺	"PCM", "Non-PCM" or "Unlocked"
CHANNEL 11	☺	☺	"PCM", "Non-PCM" or "Unlocked"
CHANNEL 12	☺	☺	"PCM", "Non-PCM" or "Unlocked"
CHANNEL 13	☺	☺	"PCM", "Non-PCM" or "Unlocked"
CHANNEL 14	☺	☺	"PCM", "Non-PCM" or "Unlocked"
CHANNEL 15	☺	☺	"PCM", "Non-PCM" or "Unlocked"
CHANNEL 16	☺	☺	"PCM", "Non-PCM" or "Unlocked"
AUDIO FEED 2	☺	☺	
CHANNEL 1	☺	☺	"PCM", "Non-PCM" or "Unlocked"
CHANNEL 2	☺	☺	"PCM", "Non-PCM" or "Unlocked"
CHANNEL 3	☺	☺	"PCM", "Non-PCM" or "Unlocked"
CHANNEL 4	☺	☺	"PCM", "Non-PCM" or "Unlocked"
CHANNEL 5	☺	☺	"PCM", "Non-PCM" or "Unlocked"
CHANNEL 6	☺	☺	"PCM", "Non-PCM" or "Unlocked"
CHANNEL 7	☺	☺	"PCM", "Non-PCM" or "Unlocked"
CHANNEL 8	☺	☺	"PCM", "Non-PCM" or "Unlocked"
CHANNEL 9	☺	☺	"PCM", "Non-PCM" or "Unlocked"
CHANNEL 10	☺	☺	"PCM", "Non-PCM" or "Unlocked"
CHANNEL 11	☺	☺	"PCM", "Non-PCM" or "Unlocked"
CHANNEL 12	☺	☺	"PCM", "Non-PCM" or "Unlocked"
CHANNEL 13	☺	☺	"PCM", "Non-PCM" or "Unlocked"
CHANNEL 14	☺	☺	"PCM", "Non-PCM" or "Unlocked"
CHANNEL 15	☺	☺	"PCM", "Non-PCM" or "Unlocked"
CHANNEL 16	☺	☺	"PCM", "Non-PCM" or "Unlocked"
AES	☺	☺	
PAIR 1L	☺	☺	"PCM", "Non-PCM" or "Unlocked"
PAIR 1R	☺	☺	"PCM", "Non-PCM" or "Unlocked"
PAIR 2L	☺	☺	"PCM", "Non-PCM" or "Unlocked"
PAIR 2R	☺	☺	"PCM", "Non-PCM" or "Unlocked"
PAIR 3L	☺	☺	"PCM", "Non-PCM" or "Unlocked"
PAIR 3R	☺	☺	"PCM", "Non-PCM" or "Unlocked"
PAIR 4L	☺	☺	"PCM", "Non-PCM" or "Unlocked"
PAIR 4R	☺	☺	"PCM", "Non-PCM" or "Unlocked"
OUTPUT STATUS	☺	☺	
PROGRAM	☺	☺	
VIDEO STANDARD	☺	☺	[4.3] Video standard of Program Output
PREVIEW	☺	☺	
VIDEO STANDARD	☺	☺	[4.3] Video standard of Preview Output
SYSTEM INFO	☺	☺	
SERIAL NUMBER	☺	☺	Serial number (factory set)
IP ADDRESS	☺	☺	IP address (changed via SETUP > NETWORK menu).
HOSTNAME	☺	☺	Hostname (changed via SETUP > NETWORK menu).
NETWORK MASK	☺	☺	Network mask (changed via SETUP > NETWORK menu).
GATEWAY ADD	☺	☺	Gateway address (changed via SETUP > NETWORK menu).
MAC ADDRESS	☺	☺	MAC address (factory set)
NTP SERVER	☺	☺	NTP server address (changed via SETUP > NETWORK menu).
OP SYSTEM	☺	☺	Linux operating system kernel version
FILE SYS TYPE	☺	☺	File system type for the /home partition (JFS)
ANIMATION MEM	☺	☺	[4.5] Store memory associated with DSK 1; "N/A" if none
ANIMATION MEM	☺	☺	[4.5] Store memory associated with DSK 2; "N/A" if none
ANIMATION MEM	☺	☺	[4.5] Store memory associated with DSK 3; "N/A" if none
ANIMATION MEM	☺	☺	[4.5] Store memory associated with DSK 4; "N/A" if none

GUIDE TO INSTALLATION AND OPERATION

Front Panel Menu Name	LGK	DSK	Description
ANIMATION MEM	☒		[4.5] Store memory associated with DSK 5; "N/A" if none
IMAGES USED	☒		Number of files in the image library (maximum 4000)
DISK SPACE USED	☒		Disk space used in MB/GB, with percentage of total space used
COM 1 COUNTERS	☒	☒	"Rx" (received data), "Tx" (transmitted data), "FE" (framing errors), "PE" (parity errors), "BI" (breaks), "OE" (overrun errors)
COM 2 COUNTERS	☒	☒	"Rx" (received data), "Tx" (transmitted data), "FE" (framing errors), "PE" (parity errors), "BI" (breaks), "OE" (overrun errors)
TIME ZONE	☒	☒	Time zone offset from GMT (changed via SETUP > DATE/TIME)
CURRENT DATE	☒	☒	Current date (changed via SETUP > DATE/TIME)
CURRENT TIME	☒	☒	Current date (changed via SETUP > DATE/TIME)
RUNNING SINCE	☒	☒	Date and time when the unit was last powered up
MAIN BOARD REV	☒	☒	Main board revision
VIDEO BOARD REV	☒	☒	Video board revision
STORE SPD	☒	☒	Store memory Serial Presence Detect (SPD) information
FPGA DATE	☒	☒	Firmware build date
FPGA IDENTITY	☒	☒	Firmware mode: "SD" or "HD"
FPGA VERSION	☒	☒	Firmware version number
KEYER CONTROL	☒	☒	
DSK 1	☒	☒	
CUT UP/DOWN	☒	☒	Cuts up/down DSK 1
FADE UP/DOWN	☒	☒	Fades up/down DSK 1
FADE RATE	☒	☒	Sets fade rate for DSK 1
DSK 2	☒	☒	
CUT UP/DOWN	☒	☒	Cuts up/down DSK 2
FADE UP/DOWN	☒	☒	Fades up/down DSK 2
FADE RATE	☒	☒	Sets fade rate for DSK 2
DSK 3	☒		
CUT UP/DOWN	☒		Cuts up/down DSK 3
FADE UP/DOWN	☒		Fades up/down DSK 3
FADE RATE	☒		Sets fade rate for DSK 3
DSK 4	☒		
CUT UP/DOWN	☒		Cuts up/down DSK 4
FADE UP/DOWN	☒		Fades up/down DSK 4
FADE RATE	☒		Sets fade rate for DSK 4
DSK 5	☒		
CUT UP/DOWN	☒		Cuts up/down DSK 5
FADE UP/DOWN	☒		Fades up/down DSK 5
FADE RATE	☒		Sets fade rate for DSK 5
BLACK	☒	☒	
CUT TO/FR BLK	☒	☒	Cuts to/from black most downstream keyer (DSK 5)
FADE TO/FR BLK	☒	☒	Fades to/from black most downstream keyer (DSK 5)
FTB RATE	☒	☒	Sets fade to black rate most downstream keyer (DSK 5)
EMERGENCY	☒		
EMER TO AIR	☒		[4.8.2.5] Switches Emergency-to-Air on
EMER FROM AIR	☒		[4.8.2.5] Switches Emergency-to-Air off
EAS	☒		
EAS ON	☒		[4.8.3.3] EAS text is cut up to reveal the emergency alert text
EAS OFF	☒		[4.8.3.3] EAS text is cut down to hide the emergency alert text
KEYER CONFIG	☒	☒	
DSK 1	☒	☒	
INPUT OPS	☒	☒	
FILL-1/KEY-1	☒	☒	Sets input source for DSK 1 to Fill-1/Key-1. This will change the Key Params (Source, Type, Sense, Masking) and CGT (Clip, Gain, Transparency) to the values saved for Fill-1/Key-1
FILL-2/KEY-2	☒	☒	Sets input source for DSK 1 to Fill-2/Key-2. This will change the Key

Front Panel Menu Name	LGK	DSK	Description
			Params (Source, Type, Sense, Masking) and CGT (Clip, Gain, Transparency) to the values saved for Fill-2/Key-2
UNLOAD INPUT	☒	☒	Unloads the keyer input, either media from a store or external fill/key
STORE OPS	☒		
LOAD IMAGE	☒		Loads a file from the image library into the appropriate store
SET POSITION	☒		Sets the screen position of an image or animation.
UNLOAD IMAGE	☒		Unloads the contents of the appropriate store.
LOAD MODE	☒		
CLEAN LOAD	☒		Unloads an existing image before loading new one
CUT LOAD	☒		Existing image remains active until new one is loaded, then a cut occurs
SET KEY PARAMS	☒	☒	
SOURCE	☒	☒	
SELF	☒	☒	[4.8.5.1] Key data is derived from the Fill signal
SEPARATE	☒	☒	[4.8.5.1] Key data is derived from Key signal
NONE	☒	☒	[4.8.5.1] Key data is set white so there is no transparency
TYPE	☒	☒	
FULL	☒	☒	[4.8.5.3] Passes the foreground signal where the key signal is present
LINEAR	☒	☒	[4.8.5.3] Sums background and foreground images to create the signal
SENSE	☒	☒	
NORMAL	☒	☒	[4.8.5.4] Selects the mode in which a black key means transparent and a white key is opaque
INVERT	☒	☒	[4.8.5.4] Selects the mode in which a white key means transparent and a black key is opaque
MASKING	☒	☒	
DISABLE	☒	☒	[4.8.5.5] Uses no masking of the keyer output
SETUP	☒	☒	[4.8.5.5] Defines a mask area within the range determined by the size of the image and the standard.
C, G & T	☒	☒	[4.8.5.2] Sets Clip, Gain and Transparency. Clip is the level under which the key signal will be forced to black. Gain amplifies the signal forcing grey levels to approach white. Transparency affects the luminance of the key and therefore the amount of background allowed in the output.
DSK 2	☒	☒	
INPUT OPS	☒	☒	
FILL-1/KEY-1	☒	☒	See "DSK 1" (above)
FILL-2/KEY-2	☒	☒	See "DSK 1" (above)
UNLOAD INPUT	☒	☒	See "DSK 1" (above)
STORE OPS	☒		
LOAD IMAGE	☒		See "DSK 1" (above)
SET POSITION	☒		See "DSK 1" (above)
UNLOAD IMAGE	☒		See "DSK 1" (above)
LOAD MODE	☒		
CLEAN LOAD	☒		See "DSK 1" (above)
CUT LOAD	☒		See "DSK 1" (above)
SET KEY PARAMS	☒	☒	
SOURCE	☒	☒	
SELF	☒	☒	See "DSK 1" (above)
SEPARATE	☒	☒	See "DSK 1" (above)
NONE	☒	☒	See "DSK 1" (above)
TYPE	☒	☒	
FULL	☒	☒	See "DSK 1" (above)
LINEAR	☒	☒	See "DSK 1" (above)
SENSE	☒	☒	
NORMAL	☒	☒	See "DSK 1" (above)
INVERT	☒	☒	See "DSK 1" (above)
MASKING	☒	☒	
DISABLE	☒	☒	See "DSK 1" (above)

GUIDE TO INSTALLATION AND OPERATION

Front Panel Menu Name	LGK	DSK	Description
SETUP	☒	☒	See "DSK 1" (above)
C, G & T	☒	☒	See "DSK 1" (above)
DSK 3	☒		
INPUT OPS	☒		
FILL-1/KEY-1	☒		See "DSK 1" (above)
FILL-2/KEY-2	☒		See "DSK 1" (above)
UNLOAD INPUT	☒		See "DSK 1" (above)
STORE OPS	☒		
LOAD IMAGE	☒		See "DSK 1" (above)
SET POSITION	☒		See "DSK 1" (above)
UNLOAD IMAGE	☒		See "DSK 1" (above)
LOAD MODE	☒		
CLEAN LOAD	☒		See "DSK 1" (above)
CUT LOAD	☒		See "DSK 1" (above)
SET KEY PARAMS	☒		
SOURCE	☒		
SELF	☒		See "DSK 1" (above)
SEPARATE	☒		See "DSK 1" (above)
NONE	☒		See "DSK 1" (above)
TYPE	☒		
FULL	☒		See "DSK 1" (above)
LINEAR	☒		See "DSK 1" (above)
SENSE	☒		
NORMAL	☒		See "DSK 1" (above)
INVERT	☒		See "DSK 1" (above)
MASKING	☒		
DISABLE	☒		See "DSK 1" (above)
SETUP	☒		See "DSK 1" (above)
C, G & T	☒		See "DSK 1" (above)
DSK 4	☒		
INPUT OPS	☒		
FILL-1/KEY-1	☒		See "DSK 1" (above)
FILL-2/KEY-2	☒		See "DSK 1" (above)
UNLOAD INPUT	☒		See "DSK 1" (above)
STORE OPS	☒		
LOAD IMAGE	☒		See "DSK 1" (above)
SET POSITION	☒		See "DSK 1" (above)
UNLOAD IMAGE	☒		See "DSK 1" (above)
LOAD MODE	☒		
CLEAN LOAD	☒		See "DSK 1" (above)
CUT LOAD	☒		See "DSK 1" (above)
SET KEY PARAMS	☒		
SOURCE	☒		
SELF	☒		See "DSK 1" (above)
SEPARATE	☒		See "DSK 1" (above)
NONE	☒		See "DSK 1" (above)
TYPE	☒		
FULL	☒		See "DSK 1" (above)
LINEAR	☒		See "DSK 1" (above)
SENSE	☒		
NORMAL	☒		See "DSK 1" (above)
INVERT	☒		See "DSK 1" (above)
MASKING	☒		

Front Panel Menu Name	LGK	DSK	Description
DISABLE	☒		See "DSK 1" (above)
SETUP	☒		See "DSK 1" (above)
C, G & T	☒		See "DSK 1" (above)
DSK 5	☒		
INPUT OPS	☒		
FILL-1/KEY-1	☒		See "DSK 1" (above)
FILL-2/KEY-2	☒		See "DSK 1" (above)
UNLOAD INPUT	☒		See "DSK 1" (above)
STORE OPS	☒		
LOAD IMAGE	☒		See "DSK 1" (above)
SET POSITION	☒		See "DSK 1" (above)
UNLOAD IMAGE	☒		See "DSK 1" (above)
LOAD MODE	☒		
CLEAN LOAD	☒		See "DSK 1" (above)
CUT LOAD	☒		See "DSK 1" (above)
SET KEY PARAMS	☒		
SOURCE	☒		
SELF	☒		See "DSK 1" (above)
SEPARATE	☒		See "DSK 1" (above)
NONE	☒		See "DSK 1" (above)
TYPE	☒		
FULL	☒		See "DSK 1" (above)
LINEAR	☒		See "DSK 1" (above)
SENSE	☒		
NORMAL	☒		See "DSK 1" (above)
INVERT	☒		See "DSK 1" (above)
MASKING	☒		
DISABLE	☒		See "DSK 1" (above)
SETUP	☒		See "DSK 1" (above)
C, G & T	☒		See "DSK 1" (above)
OPERATE	☒	☒	
SET INPUTS	☒	☒	
PGM IN	☒	☒	
PASS SDI	☒	☒	Selects incoming SDI input for use by this input
COLOUR FIELD 1	☒	☒	Selects Colour Field 1 for use by this input (in place of SDI)
COLOUR FIELD 2	☒	☒	Selects Colour Field 2 for use by this input (in place of SDI)
COLOUR FIELD 3	☒	☒	Selects Colour Field 3 for use by this input (in place of SDI)
TEST PATTERN 1	☒	☒	Selects Test Pattern 1 for use by this input (in place of SDI)
FILL-1	☒	☒	
PASS SDI	☒	☒	See "PGM IN" (above)
COLOUR FIELD 1	☒	☒	See "PGM IN" (above)
COLOUR FIELD 2	☒	☒	See "PGM IN" (above)
COLOUR FIELD 3	☒	☒	See "PGM IN" (above)
TEST PATTERN 1	☒	☒	See "PGM IN" (above)
KEY-1	☒	☒	
PASS SDI	☒	☒	See "PGM IN" (above)
COLOUR FIELD 1	☒	☒	See "PGM IN" (above)
COLOUR FIELD 2	☒	☒	See "PGM IN" (above)
COLOUR FIELD 3	☒	☒	See "PGM IN" (above)
TEST PATTERN 1	☒	☒	See "PGM IN" (above)
FILL-2	☒	☒	
PASS SDI	☒	☒	See "PGM IN" (above)
COLOUR FIELD 1	☒	☒	See "PGM IN" (above)

GUIDE TO INSTALLATION AND OPERATION

Front Panel Menu Name	LGK	DSK	Description
COLOUR FIELD 2	☺	☺	See "PGM IN" (above)
COLOUR FIELD 3	☺	☺	See "PGM IN" (above)
TEST PATTERN 1	☺	☺	See "PGM IN" (above)
KEY-2	☺	☺	
PASS SDI	☺	☺	See "PGM IN" (above)
COLOUR FIELD 1	☺	☺	See "PGM IN" (above)
COLOUR FIELD 2	☺	☺	See "PGM IN" (above)
COLOUR FIELD 3	☺	☺	See "PGM IN" (above)
TEST PATTERN 1	☺	☺	See "PGM IN" (above)
COLOUR FIELDS	☺	☺	
COLOUR FIELD 1	☺	☺	Defines Colour Field 1 in terms of RGB values
COLOUR FIELD 2	☺	☺	Defines Colour Field 2 in terms of RGB values
COLOUR FIELD 3	☺	☺	Defines Colour Field 3 in terms of RGB values
PREVIEW INPUT	☺	☺	
PGM IN	☺	☺	[4.9.1] Selects PGM IN as the input for the Preview video chain
FILL-2	☺	☺	[4.9.1] Selects FILL-2 as the input for the Preview video chain
MIX A INPUT	☺	☺	
PGM IN	☺	☺	[4.6] Selects PGM IN as the A input for the AB mixer
MIX B INPUT	☺	☺	
PGM IN	☺	☺	[4.9.1] Selects PGM IN as the B input for the AB mixer
FILL-2	☺	☺	[4.9.1] Selects FILL-2 as the B input for the AB mixer
AB MIXER	☺	☺	
CUT AB	☺	☺	[4.6] Cuts the AB mixer between the A/B inputs
CUT TO A	☺	☺	[4.6] Cuts the AB mixer to the A input
CUT TO B	☺	☺	[4.6] Cuts the AB mixer to the B input
FADE AB	☺	☺	[4.6] Fades AB mixer between the A/B inputs over AB mixer fade duration
FADE TO A	☺	☺	[4.6] Fades AB mixer to the A input over AB mixer fade duration
FADE TO B	☺	☺	[4.6] Fades AB mixer to the B input over AB mixer fade duration
TRANS TYPE	☺	☺	
X-FADE	☺	☺	[4.6] Selects cross-fading as the mode for AB mixing
V-FADE	☺	☺	[4.6] Selects V-fading as the mode for AB mixing
MIX RATE	☺	☺	[4.6] Selects AB mixer fade rate in fields/frames (interlaced/progressive)
V-FADE COLOUR	☺	☺	[4.6] Selects the color field through which V-fades will transition
SET CUT MODE	☺	☺	
ANY FIELD	☺	☺	[4.6] Selects AB cuts or fades to start on any field (interlaced)
FIELD 1 (DEF)	☺	☺	[4.6] Selects AB cuts or fades to start on field 1 (interlaced)
FIELD 2	☺	☺	[4.6] Selects AB cuts or fades to start on field 2 (interlaced)
DSK 1	☺	☺	
KEYER OPS	☺	☺	
CUT UP/DOWN	☺	☺	Cuts up/down the keyer over the background video
CUT UP	☺	☺	Cuts up the keyer over the background video
CUT DOWN	☺	☺	Cuts down the keyer over the background video
FADE UP/DOWN	☺	☺	Fades up/down the keyer over the background video
FADE UP	☺	☺	Fades up the keyer over the background video
FADE DOWN	☺	☺	Fades down the keyer over the background video
FADE RATE	☺	☺	Adjusts the keyer fade rate between 1 and 999 fields
SET KEY PARAMS	☺	☺	
SOURCE	☺	☺	
SELF	☺	☺	[4.8.5.1] Key data is derived from the Fill signal
SEPARATE	☺	☺	[4.8.5.1] Key data is derived from Key signal
NONE	☺	☺	[4.8.5.1] Key data is set white so there is no transparency
TYPE	☺	☺	
FULL	☺	☺	[4.8.5.3] Passes the foreground signal where the key signal is present

Front Panel Menu Name	LGK	DSK	Description
LINEAR	☺	☺	[4.8.5.3] Sums background and foreground images to create the signal
SENSE	☺	☺	
NORMAL	☺	☺	[4.8.5.4] Selects the mode in which a black key means transparent and a white key is opaque
INVERT	☺	☺	[4.8.5.4] Selects the mode in which a white key means transparent and a black key is opaque
MASKING	☺	☺	
DISABLE	☺	☺	[4.8.5.5] Uses no masking of the keyer output
SETUP	☺	☺	[4.8.5.5] Defines a mask area within the range determined by the size of the image and the standard.
C, G & T	☺	☺	[4.8.5.2] Sets Clip, Gain and Transparency. Clip is the level under which the key signal will be forced to black. Gain amplifies the signal forcing grey levels to approach white. Transparency affects the luminance of the key and therefore the amount of background allowed in the output.
CUT TO/FR BLK	☺	☺	Cuts to/from black output
CUT FROM BLK	☺	☺	Cuts from black output
CUT TO BLK	☺	☺	Cuts to black output
FADE TO/FR BLK	☺	☺	Fades to/from black output
FADE FROM BLK	☺	☺	Fades from black output
FADE TO BLK	☺	☺	Fades to black output
FTB RATE	☺	☺	Sets fade-to-black rate in fields between 1 and 999
INPUT OPS	☺	☺	
FILL-1/KEY-1	☺	☺	Selects keyer input from Fill-1/Key-1 rather than store
FILL-2/KEY-2	☺	☺	Selects keyer input from Fill-2/Key-2 rather than store
UNLOAD INPUT	☺	☺	Sets no external input and unloads any associated store
STORE OPS	☺		
LOAD IMAGE	☺		Loads a file from the image library into the appropriate store
SET POSITION	☺		Sets the position of an image or animation
SAVE IMAGE	☺		Saves the current image with changed settings
UNLOAD IMAGE	☺		Unloads the contents of the appropriate store
LOAD MODE	☺		
CLEAN LOAD	☺		Unloads an existing image before loading new one
CUT LOAD	☺		Existing image remains active until new one is loaded, then a cut occurs
START STRAP	☺		Starts a crawl
STOP STRAP	☺		Stops a crawl
START TIMER	☺		Starts a timer
STOP TIMER	☺		Stops a timer
RESET TIMER	☺		Resets a timer
PLAY ANIMATION	☺		Starts an animation
RESTART ANIM	☺		Restarts an animation from the beginning
STOP ANIMATION	☺		Stops an animation when it has completed a loop
STOP ANIM NOW	☺		Stops an animation immediately
DSK 2	☺	☺	
KEYER OPS	☺	☺	
CUT UP/DOWN	☺	☺	See "DSK 1" (above)
CUT UP	☺	☺	See "DSK 1" (above)
CUT DOWN	☺	☺	See "DSK 1" (above)
FADE UP/DOWN	☺	☺	See "DSK 1" (above)
FADE UP	☺	☺	See "DSK 1" (above)
FADE DOWN	☺	☺	See "DSK 1" (above)
FADE RATE	☺	☺	See "DSK 1" (above)
SET KEY PARAMS	☺	☺	
SOURCE	☺	☺	
SELF	☺	☺	See "DSK 1" (above)
SEPARATE	☺	☺	See "DSK 1" (above)

GUIDE TO INSTALLATION AND OPERATION

Front Panel Menu Name	LGK	DSK	Description
NONE	☺	☺	See "DSK 1" (above)
TYPE	☺	☺	
FULL	☺	☺	See "DSK 1" (above)
LINEAR	☺	☺	See "DSK 1" (above)
SENSE	☺	☺	
NORMAL	☺	☺	See "DSK 1" (above)
INVERT	☺	☺	See "DSK 1" (above)
MASKING	☺	☺	
DISABLE	☺	☺	See "DSK 1" (above)
SETUP	☺	☺	See "DSK 1" (above)
C, G & T	☺	☺	See "DSK 1" (above)
CUT TO/FR BLK	☺	☺	See "DSK 1" (above)
CUT FROM BLK	☺	☺	See "DSK 1" (above)
CUT TO BLK	☺	☺	See "DSK 1" (above)
FADE TO/FR BLK	☺	☺	See "DSK 1" (above)
FADE FROM BLK	☺	☺	See "DSK 1" (above)
FADE TO BLK	☺	☺	See "DSK 1" (above)
FTB RATE	☺	☺	See "DSK 1" (above)
INPUT OPS	☺	☺	
FILL-1/KEY-1	☺	☺	See "DSK 1" (above)
FILL-2/KEY-2	☺	☺	See "DSK 1" (above)
UNLOAD INPUT	☺	☺	See "DSK 1" (above)
STORE OPS	☺		
LOAD IMAGE	☺		See "DSK 1" (above)
SET POSITION	☺		See "DSK 1" (above)
SAVE IMAGE	☺		See "DSK 1" (above)
UNLOAD IMAGE	☺		See "DSK 1" (above)
LOAD MODE	☺		
CLEAN LOAD	☺		See "DSK 1" (above)
CUT LOAD	☺		See "DSK 1" (above)
START STRAP	☺		See "DSK 1" (above)
STOP STRAP	☺		See "DSK 1" (above)
START TIMER	☺		See "DSK 1" (above)
STOP TIMER	☺		See "DSK 1" (above)
RESET TIMER	☺		See "DSK 1" (above)
PLAY ANIMATION	☺		See "DSK 1" (above)
RESTART ANIM	☺		See "DSK 1" (above)
STOP ANIMATION	☺		See "DSK 1" (above)
STOP ANIM NOW	☺		See "DSK 1" (above)
DSK 3	☺		
KEYER OPS	☺		
CUT UP/DOWN	☺		See "DSK 1" (above)
CUT UP	☺		See "DSK 1" (above)
CUT DOWN	☺		See "DSK 1" (above)
FADE UP/DOWN	☺		See "DSK 1" (above)
FADE UP	☺		See "DSK 1" (above)
FADE DOWN	☺		See "DSK 1" (above)
FADE RATE	☺		See "DSK 1" (above)
SET KEY PARAMS	☺		
SOURCE	☺		
SELF	☺		See "DSK 1" (above)
SEPARATE	☺		See "DSK 1" (above)
NONE	☺		See "DSK 1" (above)

Front Panel Menu Name	LGK	DSK	Description
TYPE	☺		
FULL	☺		See "DSK 1" (above)
LINEAR	☺		See "DSK 1" (above)
SENSE	☺		
NORMAL	☺		See "DSK 1" (above)
INVERT	☺		See "DSK 1" (above)
MASKING	☺		
DISABLE	☺		See "DSK 1" (above)
SETUP	☺		See "DSK 1" (above)
C, G & T	☺		See "DSK 1" (above)
CUT TO/FR BLK	☺		See "DSK 1" (above)
CUT FROM BLK	☺		See "DSK 1" (above)
CUT TO BLK	☺		See "DSK 1" (above)
FADE TO/FR BLK	☺		See "DSK 1" (above)
FADE FROM BLK	☺		See "DSK 1" (above)
FADE TO BLK	☺		See "DSK 1" (above)
FTB RATE	☺		See "DSK 1" (above)
INPUT OPS	☺		
FILL-1/KEY-1	☺		See "DSK 1" (above)
FILL-2/KEY-2	☺		See "DSK 1" (above)
UNLOAD INPUT	☺		See "DSK 1" (above)
STORE OPS	☺		
LOAD IMAGE	☺		See "DSK 1" (above)
SET POSITION	☺		See "DSK 1" (above)
SAVE IMAGE	☺		See "DSK 1" (above)
UNLOAD IMAGE	☺		See "DSK 1" (above)
LOAD MODE	☺		
CLEAN LOAD	☺		See "DSK 1" (above)
CUT LOAD	☺		See "DSK 1" (above)
START STRAP	☺		See "DSK 1" (above)
STOP STRAP	☺		See "DSK 1" (above)
START TIMER	☺		See "DSK 1" (above)
STOP TIMER	☺		See "DSK 1" (above)
RESET TIMER	☺		See "DSK 1" (above)
PLAY ANIMATION	☺		See "DSK 1" (above)
RESTART ANIM	☺		See "DSK 1" (above)
STOP ANIMATION	☺		See "DSK 1" (above)
STOP ANIM NOW	☺		See "DSK 1" (above)
DSK 4	☺		
KEYER OPS	☺		
CUT UP/DOWN	☺		See "DSK 1" (above)
CUT UP	☺		See "DSK 1" (above)
CUT DOWN	☺		See "DSK 1" (above)
FADE UP/DOWN	☺		See "DSK 1" (above)
FADE UP	☺		See "DSK 1" (above)
FADE DOWN	☺		See "DSK 1" (above)
FADE RATE	☺		See "DSK 1" (above)
SET KEY PARAMS	☺		
SOURCE	☺		
SELF	☺		See "DSK 1" (above)
SEPARATE	☺		See "DSK 1" (above)
NONE	☺		See "DSK 1" (above)
TYPE	☺		

GUIDE TO INSTALLATION AND OPERATION

Front Panel Menu Name	LGK	DSK	Description
FULL	☒		See "DSK 1" (above)
LINEAR	☒		See "DSK 1" (above)
SENSE	☒		
NORMAL	☒		See "DSK 1" (above)
INVERT	☒		See "DSK 1" (above)
MASKING	☒		
DISABLE	☒		See "DSK 1" (above)
SETUP	☒		See "DSK 1" (above)
C, G & T	☒		See "DSK 1" (above)
CUT TO/FR BLK	☒		See "DSK 1" (above)
CUT FROM BLK	☒		See "DSK 1" (above)
CUT TO BLK	☒		See "DSK 1" (above)
FADE TO/FR BLK	☒		See "DSK 1" (above)
FADE FROM BLK	☒		See "DSK 1" (above)
FADE TO BLK	☒		See "DSK 1" (above)
FTB RATE	☒		See "DSK 1" (above)
INPUT OPS	☒		
FILL-1/KEY-1	☒		See "DSK 1" (above)
FILL-2/KEY-2	☒		See "DSK 1" (above)
UNLOAD INPUT	☒		See "DSK 1" (above)
STORE OPS	☒		
LOAD IMAGE	☒		See "DSK 1" (above)
SET POSITION	☒		See "DSK 1" (above)
SAVE IMAGE	☒		See "DSK 1" (above)
UNLOAD IMAGE	☒		See "DSK 1" (above)
LOAD MODE	☒		
CLEAN LOAD	☒		See "DSK 1" (above)
CUT LOAD	☒		See "DSK 1" (above)
START STRAP	☒		See "DSK 1" (above)
STOP STRAP	☒		See "DSK 1" (above)
START TIMER	☒		See "DSK 1" (above)
STOP TIMER	☒		See "DSK 1" (above)
RESET TIMER	☒		See "DSK 1" (above)
PLAY ANIMATION	☒		See "DSK 1" (above)
RESTART ANIM	☒		See "DSK 1" (above)
STOP ANIMATION	☒		See "DSK 1" (above)
STOP ANIM NOW	☒		See "DSK 1" (above)
DSK 5	☒		
KEYER OPS	☒		
CUT UP/DOWN	☒		See "DSK 1" (above)
CUT UP	☒		See "DSK 1" (above)
CUT DOWN	☒		See "DSK 1" (above)
FADE UP/DOWN	☒		See "DSK 1" (above)
FADE UP	☒		See "DSK 1" (above)
FADE DOWN	☒		See "DSK 1" (above)
FADE RATE	☒		See "DSK 1" (above)
SET KEY PARAMS	☒		
SOURCE	☒		
SELF	☒		See "DSK 1" (above)
SEPARATE	☒		See "DSK 1" (above)
NONE	☒		See "DSK 1" (above)
TYPE	☒		
FULL	☒		See "DSK 1" (above)

Front Panel Menu Name	LGK	DSK	Description
LINEAR	☺		See "DSK 1" (above)
SENSE	☺		
NORMAL	☺		See "DSK 1" (above)
INVERT	☺		See "DSK 1" (above)
MASKING	☺		
DISABLE	☺		See "DSK 1" (above)
SETUP	☺		See "DSK 1" (above)
C, G & T	☺		See "DSK 1" (above)
CUT TO/FR BLK	☺		See "DSK 1" (above)
CUT FROM BLK	☺		See "DSK 1" (above)
CUT TO BLK	☺		See "DSK 1" (above)
FADE TO/FR BLK	☺		See "DSK 1" (above)
FADE FROM BLK	☺		See "DSK 1" (above)
FADE TO BLK	☺		See "DSK 1" (above)
FTB RATE	☺		See "DSK 1" (above)
INPUT OPS	☺		
FILL-1/KEY-1	☺		See "DSK 1" (above)
FILL-2/KEY-2	☺		See "DSK 1" (above)
UNLOAD INPUT	☺		See "DSK 1" (above)
STORE OPS	☺		
LOAD IMAGE	☺		See "DSK 1" (above)
SET POSITION	☺		See "DSK 1" (above)
SAVE IMAGE	☺		See "DSK 1" (above)
UNLOAD IMAGE	☺		See "DSK 1" (above)
LOAD MODE	☺		
CLEAN LOAD	☺		See "DSK 1" (above)
CUT LOAD	☺		See "DSK 1" (above)
START STRAP	☺		See "DSK 1" (above)
STOP STRAP	☺		See "DSK 1" (above)
START TIMER	☺		See "DSK 1" (above)
STOP TIMER	☺		See "DSK 1" (above)
RESET TIMER	☺		See "DSK 1" (above)
PLAY ANIMATION	☺		See "DSK 1" (above)
RESTART ANIM	☺		See "DSK 1" (above)
STOP ANIMATION	☺		See "DSK 1" (above)
STOP ANIM NOW	☺		See "DSK 1" (above)
PREVIEW OUTPUT	☺	☺	
PREVIEW O/P	☺	☺	[4.9.2] Selects default Preview Output (see PREVIEW INPUT)
PROGRAM O/P	☺	☺	[4.9.2] Selects a copy of PGM OUT as the Preview Output
PGM AB MIX	☺	☺	[4.9.2] Selects output from PGM AB Mixer as the Preview Output
PGM DSK1 O/P	☺	☺	[4.9.2] Selects output from PGM DSK1 as the Preview Output
PGM DSK2 O/P	☺		[4.9.2] Selects output from PGM DSK2 as the Preview Output
PGM DSK3 O/P	☺		[4.9.2] Selects output from PGM DSK3 as the Preview Output
PGM DSK4 O/P	☺		[4.9.2] Selects output from PGM DSK4 as the Preview Output
SDI PGM IN	☺	☺	[4.9.2] Selects a copy of SDI PGM IN as the Preview Output
SDI FILL-1	☺	☺	[4.9.2] Selects a copy of SDI FILL-1 as the Preview Output
SDI KEY-1	☺	☺	[4.9.2] Selects a copy of SDI KEY-1 as the Preview Output
SDI FILL-2	☺	☺	[4.9.2] Selects a copy of SDI FILL-2 as the Preview Output
SDI KEY-2	☺	☺	[4.9.2] Selects a copy of SDI KEY-2 as the Preview Output
STORE 1 FILL	☺		[4.9.2] Selects the fill signal of Store 1 as the Preview Output
STORE 1 KEY	☺		[4.9.2] Selects the key signal of Store 1 as the Preview Output
STORE 2 FILL	☺		[4.9.2] Selects the fill signal of Store 2 as the Preview Output
STORE 2 KEY	☺		[4.9.2] Selects the key signal of Store 2 as the Preview Output

GUIDE TO INSTALLATION AND OPERATION

Front Panel Menu Name	LGK	DSK	Description
STORE 3 FILL	☺		[4.9.2] Selects the fill signal of Store 3 as the Preview Output
STORE 3 KEY	☺		[4.9.2] Selects the key signal of Store 3 as the Preview Output
AUDIO	☺	☺	
AB MIXER	☺	☺	
CUT A/B	☺	☺	[7.4.2] Cuts the audio AB mixer between the A/B inputs
CUT TO A	☺	☺	[7.4.2] Cuts the audio AB mixer to the A input
CUT TO B	☺	☺	[7.4.2] Cuts the audio AB mixer to the B input
FADE A/B	☺	☺	[7.4.2] Fades the audio AB mixer between the A/B inputs over its fade duration
FADE TO A	☺	☺	[7.4.2] Fades the audio AB mixer to the A input over its fade duration
FADE TO B	☺	☺	[7.4.2] Fades the audio AB mixer to the B input over its fade duration
SET RATE	☺	☺	[7.4.2] Selects the fade rate duration for the audio AB mixer
FTS FADER	☺	☺	
TOGGLE SILENCE	☺	☺	[7.4.2] Alternatively fades between Program Output and silence
FADE TO SIL	☺	☺	[7.4.2] Fades down the Program Output to silence
FADE FROM SIL	☺	☺	[7.4.2] Fades up the Program Output from silence
VOICE-OVERS	☺	☺	
VOICE-OVER 1	☺	☺	
TOGGLE VO	☺	☺	[4.5.2] Fades up/down the voice-over over its fade duration
FADE UP VO	☺	☺	[4.5.2] Fades up the voice-over over its fade duration
FADE DOWN VO	☺	☺	[4.5.2] Fades down the voice-over over its fade duration
SET RATE	☺	☺	[4.5.2] Selects the voice-over fade rate duration
DUCK	☺	☺	[4.5.2] Selects the background audio level attenuation during voice-overs
PRESET	☺	☺	[4.5.2] Selects the level of the voice-over audio
GAINS	☺	☺	
LOAD PRESET	☺	☺	[0] Loads a gain preset to be used with this voice-over
SAVE PRESET	☺	☺	[7.5] Saves the current gain settings as a new preset
SHUFFLES	☺	☺	
LOAD PRESET	☺	☺	[7.6] Loads a shuffle preset to be used with this voice-over
SAVE PRESET	☺	☺	[7.6] Saves the current shuffle settings as a new preset
VOICE-OVER 2	☺	☺	
TOGGLE VO	☺	☺	See "VOICE-OVER 1" (above)
FADE UP VO	☺	☺	See "VOICE-OVER 1" (above)
FADE DOWN VO	☺	☺	See "VOICE-OVER 1" (above)
SET RATE	☺	☺	See "VOICE-OVER 1" (above)
DUCK	☺	☺	See "VOICE-OVER 1" (above)
PRESET	☺	☺	See "VOICE-OVER 1" (above)
GAINS	☺	☺	
LOAD PRESET	☺	☺	See "VOICE-OVER 1" (above)
SAVE PRESET	☺	☺	See "VOICE-OVER 1" (above)
SHUFFLES	☺	☺	
LOAD PRESET	☺	☺	See "VOICE-OVER 1" (above)
SAVE PRESET	☺	☺	See "VOICE-OVER 1" (above)
VOICE-OVER 3	☺	☺	
TOGGLE VO	☺	☺	See "VOICE-OVER 1" (above)
FADE UP VO	☺	☺	See "VOICE-OVER 1" (above)
FADE DOWN VO	☺	☺	See "VOICE-OVER 1" (above)
SET RATE	☺	☺	See "VOICE-OVER 1" (above)
DUCK	☺	☺	See "VOICE-OVER 1" (above)
PRESET	☺	☺	See "VOICE-OVER 1" (above)
GAINS	☺	☺	
LOAD PRESET	☺	☺	See "VOICE-OVER 1" (above)
SAVE PRESET	☺	☺	See "VOICE-OVER 1" (above)
SHUFFLES	☺	☺	

Front Panel Menu Name	LGK	DSK	Description
LOAD PRESET	☺	☺	See "VOICE-OVER 1" (above)
SAVE PRESET	☺	☺	See "VOICE-OVER 1" (above)
VOICE-OVER 4	☺	☺	
TOGGLE VO	☺	☺	See "VOICE-OVER 1" (above)
FADE UP VO	☺	☺	See "VOICE-OVER 1" (above)
FADE DOWN VO	☺	☺	See "VOICE-OVER 1" (above)
SET RATE	☺	☺	See "VOICE-OVER 1" (above)
DUCK	☺	☺	See "VOICE-OVER 1" (above)
PRESET	☺	☺	See "VOICE-OVER 1" (above)
GAINS	☺	☺	
LOAD PRESET	☺	☺	See "VOICE-OVER 1" (above)
SAVE PRESET	☺	☺	See "VOICE-OVER 1" (above)
SHUFFLES	☺	☺	
LOAD PRESET	☺	☺	See "VOICE-OVER 1" (above)
SAVE PRESET	☺	☺	See "VOICE-OVER 1" (above)
VOICE-OVER 5	☺	☺	
TOGGLE VO	☺	☺	See "VOICE-OVER 1" (above)
FADE UP VO	☺	☺	See "VOICE-OVER 1" (above)
FADE DOWN VO	☺	☺	See "VOICE-OVER 1" (above)
SET RATE	☺	☺	See "VOICE-OVER 1" (above)
DUCK	☺	☺	See "VOICE-OVER 1" (above)
PRESET	☺	☺	See "VOICE-OVER 1" (above)
GAINS	☺	☺	
LOAD PRESET	☺	☺	See "VOICE-OVER 1" (above)
SAVE PRESET	☺	☺	See "VOICE-OVER 1" (above)
SHUFFLES	☺	☺	
LOAD PRESET	☺	☺	See "VOICE-OVER 1" (above)
SAVE PRESET	☺	☺	See "VOICE-OVER 1" (above)
VOICE-OVER 6	☺	☺	
TOGGLE VO	☺	☺	See "VOICE-OVER 1" (above)
FADE UP VO	☺	☺	See "VOICE-OVER 1" (above)
FADE DOWN VO	☺	☺	See "VOICE-OVER 1" (above)
SET RATE	☺	☺	See "VOICE-OVER 1" (above)
DUCK	☺	☺	See "VOICE-OVER 1" (above)
PRESET	☺	☺	See "VOICE-OVER 1" (above)
GAINS	☺	☺	
LOAD PRESET	☺	☺	See "VOICE-OVER 1" (above)
SAVE PRESET	☺	☺	See "VOICE-OVER 1" (above)
SHUFFLES	☺	☺	
LOAD PRESET	☺	☺	See "VOICE-OVER 1" (above)
SAVE PRESET	☺	☺	See "VOICE-OVER 1" (above)
VOICE-OVER 7	☺	☺	
TOGGLE VO	☺	☺	See "VOICE-OVER 1" (above)
FADE UP VO	☺	☺	See "VOICE-OVER 1" (above)
FADE DOWN VO	☺	☺	See "VOICE-OVER 1" (above)
SET RATE	☺	☺	See "VOICE-OVER 1" (above)
DUCK	☺	☺	See "VOICE-OVER 1" (above)
PRESET	☺	☺	See "VOICE-OVER 1" (above)
GAINS	☺	☺	
LOAD PRESET	☺	☺	See "VOICE-OVER 1" (above)
SAVE PRESET	☺	☺	See "VOICE-OVER 1" (above)
SHUFFLES	☺	☺	
LOAD PRESET	☺	☺	See "VOICE-OVER 1" (above)

GUIDE TO INSTALLATION AND OPERATION

Front Panel Menu Name	LGK	DSK	Description
SAVE PRESET	☺	☺	See "VOICE-OVER 1" (above)
VOICE-OVER 8	☺	☺	
TOGGLE VO	☺	☺	See "VOICE-OVER 1" (above)
FADE UP VO	☺	☺	See "VOICE-OVER 1" (above)
FADE DOWN VO	☺	☺	See "VOICE-OVER 1" (above)
SET RATE	☺	☺	See "VOICE-OVER 1" (above)
DUCK	☺	☺	See "VOICE-OVER 1" (above)
PRESET	☺	☺	See "VOICE-OVER 1" (above)
GAINS	☺	☺	
LOAD PRESET	☺	☺	See "VOICE-OVER 1" (above)
SAVE PRESET	☺	☺	See "VOICE-OVER 1" (above)
SHUFFLES	☺	☺	
LOAD PRESET	☺	☺	See "VOICE-OVER 1" (above)
SAVE PRESET	☺	☺	See "VOICE-OVER 1" (above)
EASYPLAY	☺		
STREAM 1	☺		
QUEUE 1	☺		
EASYPLAY LOAD	☺		Loads an Easyplay audio clip into the appropriate queue of this stream
EASYPLAY START	☺		Plays the Easyplay audio clip
EASYPLAY STOP	☺		Stops playing the Easyplay audio clip
EPLAY UNLOAD	☺		Unloads the Easyplay audio clip
QUEUE 2	☺		
EASYPLAY LOAD	☺		Loads an Easyplay audio clip into the appropriate queue of this stream
EASYPLAY START	☺		Plays the Easyplay audio clip
EASYPLAY STOP	☺		Stops playing the Easyplay audio clip
EPLAY UNLOAD	☺		Unloads the Easyplay audio clip
QUEUE 3	☺		
EASYPLAY LOAD	☺		Loads an Easyplay audio clip into the appropriate queue of this stream
EASYPLAY START	☺		Plays the Easyplay audio clip
EASYPLAY STOP	☺		Stops playing the Easyplay audio clip
EPLAY UNLOAD	☺		Unloads the Easyplay audio clip
QUEUE 4	☺		
EASYPLAY LOAD	☺		Loads an Easyplay audio clip into the appropriate queue of this stream
EASYPLAY START	☺		Plays the Easyplay audio clip
EASYPLAY STOP	☺		Stops playing the Easyplay audio clip
EPLAY UNLOAD	☺		Unloads the Easyplay audio clip
QUEUE 5	☺		
EASYPLAY LOAD	☺		Loads an Easyplay audio clip into the appropriate queue of this stream
EASYPLAY START	☺		Plays the Easyplay audio clip
EASYPLAY STOP	☺		Stops playing the Easyplay audio clip
EPLAY UNLOAD	☺		Unloads the Easyplay audio clip
INPUT MUX	☺	☺	
PROGRAM SELECT	☺	☺	[7.4.2] Selects an input for the Audio Input Program Multiplexor
PRESET SELECT	☺	☺	[7.4.2] Selects an input for the Audio Input Preset Multiplexor
OUTPUT MUX	☺	☺	
PROGRAM SELECT	☺	☺	[7.4.2] Selects an input for the Audio Output Program Multiplexor
PREVIEW SELECT	☺	☺	[7.4.2] Selects an input for the Audio Output Preset Multiplexor
METER SELECT	☺	☺	[7.4.2] Selects an input for the Audio Output Meter Multiplexor
INPUT BUSES	☺	☺	
PGM INPUT	☺	☺	
GAINS	☺	☺	
LOAD PRESET	☺	☺	[7.4.2] Loads a gain preset for the Audio Input Program Gain
SAVE PRESET	☺	☺	[7.4.2] Saves a gain preset for the Audio Input Program Gain

Front Panel Menu Name	LGK	DSK	Description
SHUFFLES	☺	☺	
LOAD PRESET	☺	☺	[7.4.2] Loads a shuffle preset for the Audio Input Program Shuffler
SAVE PRESET	☺	☺	[7.4.2] Saves a shuffle preset for the Audio Input Program Shuffler
PST INPUT	☺	☺	
GAINS	☺	☺	
LOAD PRESET	☺	☺	[7.4.2] Loads a gain preset for the Audio Input Preset Gain
SAVE PRESET	☺	☺	[7.4.2] Saves a gain preset for the Audio Input Preset Gain
SHUFFLES	☺	☺	
LOAD PRESET	☺	☺	[7.4.2] Loads a shuffle preset for the Audio Input Preset Shuffler
SAVE PRESET	☺	☺	[7.4.2] Saves a shuffle preset for the Audio Input Preset Shuffler
OUTPUT BUSES	☺	☺	
PGM OUTPUT	☺	☺	
GAINS	☺	☺	
LOAD PRESET	☺	☺	[7.4.2] Loads a gain preset for the Audio Output Program Gain
SAVE PRESET	☺	☺	[7.4.2] Saves a gain preset for the Audio Output Program Gain
SHUFFLES	☺	☺	
LOAD PRESET	☺	☺	[7.4.2] Loads a shuffle preset for the Audio Output Program Shuffler
SAVE PRESET	☺	☺	[7.4.2] Saves a shuffle preset for the Audio Output Program Shuffler
LEGACY SHUFFLES	☺	☺	
A-INPUT	☺	☺	
CHANNEL 1	☺	☺	Select the legacy shuffle mapping for input bunch 1 of the A Input
CHANNEL 2	☺	☺	Select the legacy shuffle mapping for input bunch 2 of the A Input
CHANNEL 3	☺	☺	Select the legacy shuffle mapping for input bunch 3 of the A Input
CHANNEL 4	☺	☺	Select the legacy shuffle mapping for input bunch 4 of the A Input
VOICE-OVER	☺	☺	
CHANNEL 1	☺	☺	Select the legacy shuffle mapping for input bunch 1 of the VO1 Input
CHANNEL 2	☺	☺	Select the legacy shuffle mapping for input bunch 2 of the VO1 Input
CHANNEL 3	☺	☺	Select the legacy shuffle mapping for input bunch 3 of the VO1 Input
CHANNEL 4	☺	☺	Select the legacy shuffle mapping for input bunch 4 of the VO1 Input
B-INPUT	☺	☺	
CHANNEL 1	☺	☺	Select the legacy shuffle mapping for input bunch 1 of the B Input
CHANNEL 2	☺	☺	Select the legacy shuffle mapping for input bunch 2 of the B Input
CHANNEL 3	☺	☺	Select the legacy shuffle mapping for input bunch 3 of the B Input
CHANNEL 4	☺	☺	Select the legacy shuffle mapping for input bunch 4 of the B Input
GPI OUTPUT	☺	☺	
GPI OUT 0 ON	☺	☺	[4.10.2] Sets GPI Output 0 on
GPI OUT 0 OFF	☺	☺	[4.10.2] Sets GPI Output 0 off
GPI OUT 1 ON	☺	☺	[4.10.2] Sets GPI Output 1 on
GPI OUT 1 OFF	☺	☺	[4.10.2] Sets GPI Output 1 off
GPI OUT 2 ON	☺	☺	[4.10.2] Sets GPI Output 2 on
GPI OUT 2 OFF	☺	☺	[4.10.2] Sets GPI Output 2 off
GPI OUT 3 ON	☺	☺	[4.10.2] Sets GPI Output 3 on
GPI OUT 3 OFF	☺	☺	[4.10.2] Sets GPI Output 3 off
GPI OUT 4 ON	☺	☺	[4.10.2] Sets GPI Output 4 on
GPI OUT 4 OFF	☺	☺	[4.10.2] Sets GPI Output 4 off
GPI OUT 5 ON	☺	☺	[4.10.2] Sets GPI Output 5 on
GPI OUT 5 OFF	☺	☺	[4.10.2] Sets GPI Output 5 off
GPI OUT 6 ON	☺	☺	[4.10.2] Sets GPI Output 6 on
GPI OUT 6 OFF	☺	☺	[4.10.2] Sets GPI Output 6 off
GPI OUT 7 ON	☺	☺	[4.10.2] Sets GPI Output 7 on
GPI OUT 7 OFF	☺	☺	[4.10.2] Sets GPI Output 7 off
MISCELLANEOUS	☺		
EMER TO AIR	☺		[4.8.2.5] Switches Emergency-to-Air on

GUIDE TO INSTALLATION AND OPERATION

Front Panel Menu Name	LGK	DSK	Description
EMER FROM AIR	☺		[4.8.2.5] Switches Emergency-to-Air off
EAS ON	☺		[4.8.3.3] EAS text is cut up to reveal the emergency alert text
EAS OFF	☺		[4.8.3.3] EAS text is cut down to hide the emergency alert text
SETUP	☺	☺	
AUDIO SETUP	☺	☺	
AUDIO METERING	☺	☺	
METERS 1 - 4	☺	☺	[7.4.4] Displays four audio metering channels on the front panel
METERS 5 - 8	☺	☺	[7.4.4] Displays four audio metering channels on the front panel
METERS 9 - 12	☺	☺	[7.4.4] Displays four audio metering channels on the front panel
METERS 13 - 16	☺	☺	[7.4.4] Displays four audio metering channels on the front panel
METERS 1 & 2	☺	☺	[7.4.4] Displays two audio metering channels on the front panel
METERS 3 & 4	☺	☺	[7.4.4] Displays two audio metering channels on the front panel
METERS 5 & 6	☺	☺	[7.4.4] Displays two audio metering channels on the front panel
METERS 7 & 8	☺	☺	[7.4.4] Displays two audio metering channels on the front panel
METERS 9 & 10	☺	☺	[7.4.4] Displays two audio metering channels on the front panel
METERS 11 & 12	☺	☺	[7.4.4] Displays two audio metering channels on the front panel
METERS 13 & 14	☺	☺	[7.4.4] Displays two audio metering channels on the front panel
METERS 15 & 16	☺	☺	[7.4.4] Displays two audio metering channels on the front panel
FOLLOW VIDEO	☺	☺	
A/B MIX	☺	☺	Selects whether the audio AB mixer follows video AB mixer
FADE-TO-BLACK	☺	☺	Selects whether audio silence follows video fade-to-black
DELAYS	☺	☺	
DELAY BANK 1	☺	☺	[7.4.3] Sets the delay of audio bank 1
DELAY BANK 2	☺	☺	[7.4.3] Sets the delay of audio bank 2
DELAY BANK 3	☺	☺	[7.4.3] Sets the delay of audio bank 3
DELAY BANK 4	☺	☺	[7.4.3] Sets the delay of audio bank 4
EASYPLAY	☺		
STREAM 1	☺		
FOLLOW DSK	☺		
OFF	☺		[7.4.1] No association between Easyplay and any video layer
PGM	☺		[7.4.1] Easyplay follows video layer cuts/fades, loads/unloads from PGM
PST	☺		[7.4.1] Easyplay follows video layer cuts/fades, loads/unloads from PST
ASSOC VOICEOVER	☺		
NO ASSOCIATION	☺		[7.4.1] No association between this Easyplay stream and any voice-over
VOICEOVER 1	☺		[7.4.1] Association between this Easyplay stream and voice-over 1
VOICEOVER 2	☺		[7.4.1] Association between this Easyplay stream and voice-over 2
VOICEOVER 3	☺		[7.4.1] Association between this Easyplay stream and voice-over 3
VOICEOVER 4	☺		[7.4.1] Association between this Easyplay stream and voice-over 4
VOICEOVER 5	☺		[7.4.1] Association between this Easyplay stream and voice-over 5
VOICEOVER 6	☺		[7.4.1] Association between this Easyplay stream and voice-over 6
VOICEOVER 7	☺		[7.4.1] Association between this Easyplay stream and voice-over 7
VOICEOVER 8	☺		[7.4.1] Association between this Easyplay stream and voice-over 8
STREAM 2	☺		
FOLLOW DSK	☺		
OFF	☺		See "STREAM 1" (above)
PGM	☺		See "STREAM 1" (above)
PST	☺		See "STREAM 1" (above)
ASSOC VOICEOVER	☺		
NO ASSOCIATION	☺		See "STREAM 1" (above)
VOICEOVER 1	☺		See "STREAM 1" (above)
VOICEOVER 2	☺		See "STREAM 1" (above)
VOICEOVER 3	☺		See "STREAM 1" (above)
VOICEOVER 4	☺		See "STREAM 1" (above)

Front Panel Menu Name	LGK	DSK	Description
VOICEOVER 5	☺		See "STREAM 1" (above)
VOICEOVER 6	☺		See "STREAM 1" (above)
VOICEOVER 7	☺		See "STREAM 1" (above)
VOICEOVER 8	☺		See "STREAM 1" (above)
NETWORK	☺	☺	
HOSTNAME	☺	☺	Sets the card's Hostname on the network
IP ADDRESS	☺	☺	Sets the card's IP Address on the network
NETWORK MASK	☺	☺	Sets the card's Network Mask on the network
GATEWAY ADD	☺	☺	Sets the Gateway Server on the network
NTP SERVER	☺	☺	Sets the Network Time Protocol server IP Address on the network
LOGGING	☺	☺	
LOGGING LEVEL	☺	☺	
ERRORS ONLY	☺	☺	[4.14.1] Selects a logging level where only errors are listed in log files
MEDIA/KEYING	☺	☺	[4.14.1] Selects a logging level where only errors, media operations and keyer transitions are listed in log files
VERBOSE	☺	☺	[4.14.1] Selects a logging level where errors and all valid automation commands are listed in log files
VERBOSE+OXSOX	☺	☺	[4.14.1] Selects a logging level where errors, all valid automation commands and all OxSox commands are listed in log files
LOGGING SERVER	☺	☺	[4.14.2] Selects a server to be used for logging if required
LOCAL LOGGING	☺	☺	
DISABLED	☺	☺	[4.14.3] Switches local logging on the unit itself off
ENABLED	☺	☺	[4.14.3] Switches local logging on the unit itself on
GPI	☺	☺	
GPI INPUTS	☺	☺	
GPI IN 0 ON	☺	☺	[4.10.1] Defines macro to action when GPI_IN_0 switches on
GPI IN 0 OFF	☺	☺	[4.10.1] Defines macro to action when GPI_IN_0 switches off
GPI IN 1 ON	☺	☺	[4.10.1] Defines macro to action when GPI_IN_1 switches on
GPI IN 1 OFF	☺	☺	[4.10.1] Defines macro to action when GPI_IN_1 switches off
GPI IN 2 ON	☺	☺	[4.10.1] Defines macro to action when GPI_IN_2 switches on
GPI IN 2 OFF	☺	☺	[4.10.1] Defines macro to action when GPI_IN_2 switches off
GPI IN 3 ON	☺	☺	[4.10.1] Defines macro to action when GPI_IN_3 switches on
GPI IN 3 OFF	☺	☺	[4.10.1] Defines macro to action when GPI_IN_3 switches off
GPI IN 4 ON	☺	☺	[4.10.1] Defines macro to action when GPI_IN_4 switches on
GPI IN 4 OFF	☺	☺	[4.10.1] Defines macro to action when GPI_IN_4 switches off
GPI IN 5 ON	☺	☺	[4.10.1] Defines macro to action when GPI_IN_5 switches on
GPI IN 5 OFF	☺	☺	[4.10.1] Defines macro to action when GPI_IN_5 switches off
GPI IN 6 ON	☺	☺	[4.10.1] Defines macro to action when GPI_IN_6 switches on
GPI IN 6 OFF	☺	☺	[4.10.1] Defines macro to action when GPI_IN_6 switches off
GPI IN 7 ON	☺	☺	[4.10.1] Defines macro to action when GPI_IN_7 switches on
GPI IN 7 OFF	☺	☺	[4.10.1] Defines macro to action when GPI_IN_7 switches off
GPI OUTPUTS	☺	☺	
GPI OUT 0 ON	☺	☺	[4.10.2] Selects an event that will trigger GPI_OUT_0 to switch on
GPI OUT 0 OFF	☺	☺	[4.10.2] Selects an event that will trigger GPI_OUT_0 to switch off
GPI OUT 1 ON	☺	☺	[4.10.2] Selects an event that will trigger GPI_OUT_1 to switch on
GPI OUT 1 OFF	☺	☺	[4.10.2] Selects an event that will trigger GPI_OUT_1 to switch off
GPI OUT 2 ON	☺	☺	[4.10.2] Selects an event that will trigger GPI_OUT_2 to switch on
GPI OUT 2 OFF	☺	☺	[4.10.2] Selects an event that will trigger GPI_OUT_2 to switch off
GPI OUT 3 ON	☺	☺	[4.10.2] Selects an event that will trigger GPI_OUT_3 to switch on
GPI OUT 3 OFF	☺	☺	[4.10.2] Selects an event that will trigger GPI_OUT_3 to switch off
GPI OUT 4 ON	☺	☺	[4.10.2] Selects an event that will trigger GPI_OUT_4 to switch on
GPI OUT 4 OFF	☺	☺	[4.10.2] Selects an event that will trigger GPI_OUT_4 to switch off
GPI OUT 5 ON	☺	☺	[4.10.2] Selects an event that will trigger GPI_OUT_5 to switch on
GPI OUT 5 OFF	☺	☺	[4.10.2] Selects an event that will trigger GPI_OUT_5 to switch off

GUIDE TO INSTALLATION AND OPERATION

Front Panel Menu Name	LGK	DSK	Description
GPI OUT 6 ON	☒	☒	[4.10.2] Selects an event that will trigger GPI_OUT_6 to switch on
GPI OUT 6 OFF	☒	☒	[4.10.2] Selects an event that will trigger GPI_OUT_6 to switch off
GPI OUT 7 ON	☒	☒	[4.10.2] Selects an event that will trigger GPI_OUT_7 to switch on
GPI OUT 7 OFF	☒	☒	[4.10.2] Selects an event that will trigger GPI_OUT_7 to switch off
SHOW GPI IPS	☒	☒	Shows current state of GPI inputs
SHOW GPI OPS	☒	☒	Shows current state of GPI outputs
TIMECODE	☒	☒	
TIMECODE SOURCE	☒	☒	
LTC	☒	☒	Selects LTC as the timeout source
VITC	☒	☒	Selects VITC as the timeout source
TIMECODE STATUS	☒	☒	"LTC" or "VITC" if valid TC is present; otherwise "BAD-Internal" "DF" for dropframe; "ND" for no dropframe "Fwd" or "Bwd" shows LTC direction
TIMECODE TIME	☒	☒	"Ext" if valid external time code; "Int" if using internal clock
DATE/TIME	☒	☒	
DATE	☒	☒	Sets the card's date (internal clock only). Preserved until next restart
TIME	☒	☒	Sets the card's time (internal clock only). Preserved until next restart
TIME ZONE	☒	☒	Sets the card's timezone
SERIAL COMMS	☒	☒	
SERIAL PORTS	☒	☒	
COM 1	☒	☒	
BAUD RATE	☒	☒	[5.4.8] Sets baud rate for COM 1 (9600, 19200, 38400, 57600, 115200)
PROTOCOL	☒	☒	[5.4.8] Sets protocol for COM 1 (Automation, Intuition)
SERIAL TYPE	☒	☒	[5.4.8] Sets serial type for COM 1 (RS232, RS422)
COM 2	☒	☒	
BAUD RATE	☒	☒	[5.4.9] Sets baud rate for COM 2 (9600, 19200, 38400, 57600, 115200)
PROTOCOL	☒	☒	[5.4.9] Sets protocol for COM 2 (Automation, Intuition)
SERIAL TYPE	☒	☒	[5.4.9] Sets serial type for COM 2 (RS232, RS422)
SERIAL LEVEL	☒	☒	
STRICT	☒	☒	Enforces strict serial communications from automation. The STX must always alternate between STX0 and STX1. If no ACK is received the message must be sent again with the same type of STX.
RELAXED	☒	☒	Allows relaxed serial communications from automation. The STX does not need to alternate between STX0 and STX1 as either value is always valid.
VIDEO STANDARD	☒	☒	
625 LINE	☒	☒	[4.3.1] Selects 625i / 50 as the next video standard
525 LINE	☒	☒	[4.3.1] Selects 525i / 59.94 as the next video standard
1080I/59.94	☒	☒	[4.3.1] Selects 1080i / 59.94 as the next video standard
1080I/50	☒	☒	[4.3.1] Selects 1080i / 50 as the next video standard
1080P/59.94 A	☒	☒	[4.3.1] Selects 1080p Level A / 59.94 as the next video standard
1080P/50 A	☒	☒	[4.3.1] Selects 1080p Level A / 50 as the next video standard
720P/59.94	☒	☒	[4.3.1] Selects 720p / 59.94 as the next video standard
720P/50	☒	☒	[4.3.1] Selects 720p / 50 as the next video standard
REFERENCE	☒	☒	
OFFSET	☒	☒	
LINES/SAMPLES	☒	☒	[4.4.2] Sets the Output Reference Offset in Lines and Samples
LINES/US	☒	☒	[4.4.2] Sets the Output Reference Offset in Lines and micro seconds
URS	☒	☒	
DISABLED	☒	☒	[4.4.1] Disables URS from REF-1801 card
ENABLED	☒	☒	[4.4.1] Enables URS from REF-1801 card (if present)
STORES	☒	☒	
STORES CONFIG	☒	☒	Selects the stores to keyer configuration.
STORES MEMORY	☒	☒	Selects the memory allocation for each available store
INTUITION	☒	☒	

Front Panel Menu Name	LGK	DSK	Description
KEYER ASSIGN	☺	☺	
NONE	☺	☺	[4.11.2] Disables automatic keyer management
DSK 1	☺	☺	[4.11.2] Assigns DSK 1 for automatic keyer management
DSK 2	☺	☺	[4.11.2] Assigns DSK 2 for automatic keyer management
DSK 3	☺		[4.11.2] Assigns DSK 3 for automatic keyer management
DSK 4	☺		[4.11.2] Assigns DSK 4 for automatic keyer management
DSK 5	☺		[4.11.2] Assigns DSK 5 for automatic keyer management
KEYER RELEASE	☺	☺	
DISABLED	☺	☺	[4.11.2] Leaves the assigned keyer cut up when all Graphics Co-Processor keyers are cut down
ENABLED	☺	☺	[4.11.2] Cuts down the assigned keyer when all Graphics Co-Processor keyers are cut down
KEYER STATUS	☺	☺	
KEYER STATUS	☺	☺	[4.11.2] Displays Co-Processor layers for automatic keyer management
FILL&KEY INPUT	☺	☺	
FILL-1/KEY-1	☺	☺	[4.11.2] Routes Fill-1/Key-1 inputs to the assigned keyer during automatic keyer management.
FILL-2/KEY-2	☺	☺	[4.11.2] Routes Fill-2/Key-2 inputs to the assigned keyer during automatic keyer management.
MISCELLANEOUS	☺	☺	
CLOSED CAP	☺	☺	
DISABLED	☺	☺	[4.12] Allows keyed graphics to overwrite Closed Caption information in the active picture for NTSC
ENABLED	☺	☺	[4.12] Preserves Closed Caption information in active picture for NTSC
SEND WAKEUP	☺	☺	Sends a wake up packet to all connections
FILE OPS	☺	☺	
ERASE IMAGE	☺		Erases an image from disk storage
ERASE AUDIO	☺		
ACTIVE PREVIEW	☺	☺	
DISABLED	☺	☺	[4.9.3] Switches off active preview mode for Xpanel and iControl
ENABLED	☺	☺	[4.9.3] Switches on active preview mode for Xpanel and iControl
SELF TESTS	☺	☺	
DSK 1	☺		
IMAGE BORDER	☺		Displays a test pattern showing 4-pixel width colored borders
ANIMATION FILL	☺		Shows a continuously repeating progress bar
DSK 2	☺		
IMAGE BORDER	☺		See "DSK 1" above
ANIMATION FILL	☺		See "DSK 1" above
DSK 3	☺		
IMAGE BORDER	☺		See "DSK 1" above
ANIMATION FILL	☺		See "DSK 1" above
DSK 4	☺		
IMAGE BORDER	☺		See "DSK 1" above
ANIMATION FILL	☺		See "DSK 1" above
DSK 5	☺		
IMAGE BORDER	☺		See "DSK 1" above
ANIMATION FILL	☺		See "DSK 1" above
PROD TESTS	☺	☺	Enters Production Mode in which all functions of the card halt
SOFT RESTART	☺	☺	Causes the software to restart
HARD RESTART	☺	☺	Causes the hardware to reboot
FACTORY RESET	☺	☺	Resets the unit to the factory default configuration
SAFE SHUTDOWN	☺	☺	Prepares the unit to be powered off
TEST	☺	☺	
TEST PATTERN	☺	☺	
OFF	☺	☺	Switches off the test pattern signal for PGM OUT and PVW OUT

GUIDE TO INSTALLATION AND OPERATION

Front Panel Menu Name	LGK	DSK	Description
ON	☒	☒	Switches on the test pattern signal for PGM OUT and PVW OUT
CONFIG ALARMS	☒	☒	
EXT REFERENCE	☒	☒	
UNLOCKED	☒	☒	
ALARM LEVEL	☒	☒	
GREEN	☒	☒	[6.2] Sets alarm level for External Reference unlocked to No Error
YELLOW	☒	☒	[6.2] Sets alarm level for External Reference unlocked to Warning
RED	☒	☒	[6.2] Sets alarm level for External Reference unlocked to Error
FLASH RED	☒	☒	[6.2] Sets alarm level for External Reference unlocked to Critical Error
ALARM REPORT	☒	☒	
NONE	☒	☒	Do not report this alarm using the frame GPI
FRAME GPI	☒	☒	Report this alarm using the frame GPI
MISMATCH	☒	☒	
ALARM LEVEL	☒	☒	
GREEN	☒	☒	[6.2] Sets alarm level for External Reference mismatch to No Error
YELLOW	☒	☒	[6.2] Sets alarm level for External Reference mismatch to Warning
RED	☒	☒	[6.2] Sets alarm level for External Reference mismatch to Error
FLASH RED	☒	☒	[6.2] Sets alarm level for External Reference mismatch to Critical Error
ALARM REPORT	☒	☒	
NONE	☒	☒	Do not report this alarm using the frame GPI
FRAME GPI	☒	☒	Report this alarm using the frame GPI
PGM IN	☒	☒	
VIDEO LOSS	☒	☒	
ALARM LEVEL	☒	☒	
GREEN	☒	☒	[6.2] Sets alarm level for PGM IN video loss to No Error
YELLOW	☒	☒	[6.2] Sets alarm level for PGM IN video loss to Warning
RED	☒	☒	[6.2] Sets alarm level for PGM IN video loss to Error
FLASH RED	☒	☒	[6.2] Sets alarm level for PGM IN video loss to Critical Error
ALARM REPORT	☒	☒	
NONE	☒	☒	Do not report this alarm using the frame GPI
FRAME GPI	☒	☒	Report this alarm using the frame GPI
VIDEO MISMATCH	☒	☒	
ALARM LEVEL	☒	☒	
GREEN	☒	☒	[6.2] Sets alarm level for PGM IN video mismatch to No Error
YELLOW	☒	☒	[6.2] Sets alarm level for PGM IN video mismatch to Warning
RED	☒	☒	[6.2] Sets alarm level for PGM IN video mismatch to Error
FLASH RED	☒	☒	[6.2] Sets alarm level for PGM IN video mismatch to Critical Error
ALARM REPORT	☒	☒	
NONE	☒	☒	Do not report this alarm using the frame GPI
FRAME GPI	☒	☒	Report this alarm using the frame GPI
INPUT TIMING	☒	☒	
ALARM LEVEL	☒	☒	
GREEN	☒	☒	[6.2] Sets alarm level for PGM IN input timing to No Error
YELLOW	☒	☒	[6.2] Sets alarm level for PGM IN input timing to Warning
RED	☒	☒	[6.2] Sets alarm level for PGM IN input timing to Error
FLASH RED	☒	☒	[6.2] Sets alarm level for PGM IN input timing to Critical Error
ALARM REPORT	☒	☒	
NONE	☒	☒	Do not report this alarm using the frame GPI
FRAME GPI	☒	☒	Report this alarm using the frame GPI
FILL-1	☒	☒	
VIDEO LOSS	☒	☒	
ALARM LEVEL	☒	☒	
GREEN	☒	☒	[6.2] Sets alarm level for FILL 1 video loss to No Error

Front Panel Menu Name	LGK	DSK	Description
YELLOW	☺	☺	[6.2] Sets alarm level for FILL 1 video loss to Warning
RED	☺	☺	[6.2] Sets alarm level for FILL 1 video loss to Error
FLASH RED	☺	☺	[6.2] Sets alarm level for FILL 1 video loss to Critical Error
ALARM REPORT	☺	☺	
NONE	☺	☺	Do not report this alarm using the frame GPI
FRAME GPI	☺	☺	Report this alarm using the frame GPI
VIDEO MISMATCH	☺	☺	
ALARM LEVEL	☺	☺	
GREEN	☺	☺	[6.2] Sets alarm level for FILL 1 video mismatch to No Error
YELLOW	☺	☺	[6.2] Sets alarm level for FILL 1 video mismatch to Warning
RED	☺	☺	[6.2] Sets alarm level for FILL 1 video mismatch to Error
FLASH RED	☺	☺	[6.2] Sets alarm level for FILL 1 video mismatch to Critical Error
ALARM REPORT	☺	☺	
NONE	☺	☺	Do not report this alarm using the frame GPI
FRAME GPI	☺	☺	Report this alarm using the frame GPI
INPUT TIMING	☺	☺	
ALARM LEVEL	☺	☺	
GREEN	☺	☺	[6.2] Sets alarm level for FILL 1 input timing to No Error
YELLOW	☺	☺	[6.2] Sets alarm level for FILL 1 input timing to Warning
RED	☺	☺	[6.2] Sets alarm level for FILL 1 input timing to Error
FLASH RED	☺	☺	[6.2] Sets alarm level for FILL 1 input timing to Critical Error
ALARM REPORT	☺	☺	
NONE	☺	☺	Do not report this alarm using the frame GPI
FRAME GPI	☺	☺	Report this alarm using the frame GPI
KEY-1	☺	☺	
VIDEO LOSS	☺	☺	
ALARM LEVEL	☺	☺	
GREEN	☺	☺	[6.2] Sets alarm level for KEY 1 video loss to No Error
YELLOW	☺	☺	[6.2] Sets alarm level for KEY 1 video loss to Warning
RED	☺	☺	[6.2] Sets alarm level for KEY 1 video loss to Error
FLASH RED	☺	☺	[6.2] Sets alarm level for KEY 1 video loss to Critical Error
ALARM REPORT	☺	☺	
NONE	☺	☺	Do not report this alarm using the frame GPI
FRAME GPI	☺	☺	Report this alarm using the frame GPI
VIDEO MISMATCH	☺	☺	
ALARM LEVEL	☺	☺	
GREEN	☺	☺	[6.2] Sets alarm level for KEY 1 video mismatch to No Error
YELLOW	☺	☺	[6.2] Sets alarm level for KEY 1 video mismatch to Warning
RED	☺	☺	[6.2] Sets alarm level for KEY 1 video mismatch to Error
FLASH RED	☺	☺	[6.2] Sets alarm level for KEY 1 video mismatch to Critical Error
ALARM REPORT	☺	☺	
NONE	☺	☺	Do not report this alarm using the frame GPI
FRAME GPI	☺	☺	Report this alarm using the frame GPI
INPUT TIMING	☺	☺	
ALARM LEVEL	☺	☺	
GREEN	☺	☺	[6.2] Sets alarm level for KEY 1 input timing to No Error
YELLOW	☺	☺	[6.2] Sets alarm level for KEY 1 input timing to Warning
RED	☺	☺	[6.2] Sets alarm level for KEY 1 input timing to Error
FLASH RED	☺	☺	[6.2] Sets alarm level for KEY 1 input timing to Critical Error
ALARM REPORT	☺	☺	
NONE	☺	☺	Do not report this alarm using the frame GPI
FRAME GPI	☺	☺	Report this alarm using the frame GPI
FILL-2	☺	☺	

GUIDE TO INSTALLATION AND OPERATION

Front Panel Menu Name	LGK	DSK	Description
VIDEO LOSS	☒	☒	
ALARM LEVEL	☒	☒	
GREEN	☒	☒	[6.2] Sets alarm level for FILL 2 video loss to No Error
YELLOW	☒	☒	[6.2] Sets alarm level for FILL 2 video loss to Warning
RED	☒	☒	[6.2] Sets alarm level for FILL 2 video loss to Error
FLASH RED	☒	☒	[6.2] Sets alarm level for FILL 2 video loss to Critical Error
ALARM REPORT	☒	☒	
NONE	☒	☒	Do not report this alarm using the frame GPI
FRAME GPI	☒	☒	Report this alarm using the frame GPI
VIDEO MISMATCH	☒	☒	
ALARM LEVEL	☒	☒	
GREEN	☒	☒	[6.2] Sets alarm level for FILL 2 video mismatch to No Error
YELLOW	☒	☒	[6.2] Sets alarm level for FILL 2 video mismatch to Warning
RED	☒	☒	[6.2] Sets alarm level for FILL 2 video mismatch to Error
FLASH RED	☒	☒	[6.2] Sets alarm level for FILL 2 video mismatch to Critical Error
ALARM REPORT	☒	☒	
NONE	☒	☒	Do not report this alarm using the frame GPI
FRAME GPI	☒	☒	Report this alarm using the frame GPI
INPUT TIMING	☒	☒	
ALARM LEVEL	☒	☒	
GREEN	☒	☒	[6.2] Sets alarm level for FILL 2 input timing to No Error
YELLOW	☒	☒	[6.2] Sets alarm level for FILL 2 input timing to Warning
RED	☒	☒	[6.2] Sets alarm level for FILL 2 input timing to Error
FLASH RED	☒	☒	[6.2] Sets alarm level for FILL 2 input timing to Critical Error
ALARM REPORT	☒	☒	
NONE	☒	☒	Do not report this alarm using the frame GPI
FRAME GPI	☒	☒	Report this alarm using the frame GPI
KEY-2	☒	☒	
VIDEO LOSS	☒	☒	
ALARM LEVEL	☒	☒	
GREEN	☒	☒	[6.2] Sets alarm level for KEY 2 video loss to No Error
YELLOW	☒	☒	[6.2] Sets alarm level for KEY 2 video loss to Warning
RED	☒	☒	[6.2] Sets alarm level for KEY 2 video loss to Error
FLASH RED	☒	☒	[6.2] Sets alarm level for KEY 2 video loss to Critical Error
ALARM REPORT	☒	☒	
NONE	☒	☒	Do not report this alarm using the frame GPI
FRAME GPI	☒	☒	Report this alarm using the frame GPI
VIDEO MISMATCH	☒	☒	
ALARM LEVEL	☒	☒	
GREEN	☒	☒	[6.2] Sets alarm level for KEY 2 video mismatch to No Error
YELLOW	☒	☒	[6.2] Sets alarm level for KEY 2 video mismatch to Warning
RED	☒	☒	[6.2] Sets alarm level for KEY 2 video mismatch to Error
FLASH RED	☒	☒	[6.2] Sets alarm level for KEY 2 video mismatch to Critical Error
ALARM REPORT	☒	☒	
NONE	☒	☒	Do not report this alarm using the frame GPI
FRAME GPI	☒	☒	Report this alarm using the frame GPI
INPUT TIMING	☒	☒	
ALARM LEVEL	☒	☒	
GREEN	☒	☒	[6.2] Sets alarm level for KEY 2 input timing to No Error
YELLOW	☒	☒	[6.2] Sets alarm level for KEY 2 input timing to Warning
RED	☒	☒	[6.2] Sets alarm level for KEY 2 input timing to Error
FLASH RED	☒	☒	[6.2] Sets alarm level for KEY 2 input timing to Critical Error
ALARM REPORT	☒	☒	

Front Panel Menu Name	LGK	DSK	Description
NONE	☒	☒	Do not report this alarm using the frame GPI
FRAME GPI	☒	☒	Report this alarm using the frame GPI
OVERALL TIMING	☒	☒	
ALARM LEVEL	☒	☒	
GREEN	☒	☒	[6.2] Sets alarm level for overall input timing to No Error
YELLOW	☒	☒	[6.2] Sets alarm level for overall input timing to Warning
RED	☒	☒	[6.2] Sets alarm level for overall input timing to Error
FLASH RED	☒	☒	[6.2] Sets alarm level for overall input timing to Critical Error
ALARM REPORT	☒	☒	
NONE	☒	☒	Do not report this alarm using the frame GPI
FRAME GPI	☒	☒	Report this alarm using the frame GPI
TEMP FAIL	☒	☒	
ALARM LEVEL	☒	☒	
GREEN	☒	☒	[6.2] Sets alarm level for temperature failure to No Error
YELLOW	☒	☒	[6.2] Sets alarm level for temperature failure to Warning
RED	☒	☒	[6.2] Sets alarm level for temperature failure to Error
FLASH RED	☒	☒	[6.2] Sets alarm level for temperature failure to Critical Error
ALARM REPORT	☒	☒	
NONE	☒	☒	Do not report this alarm using the frame GPI
FRAME GPI	☒	☒	Report this alarm using the frame GPI
VOLTAGE FAIL	☒	☒	
ALARM LEVEL	☒	☒	
GREEN	☒	☒	[6.2] Sets alarm level for voltage failure to No Error
YELLOW	☒	☒	[6.2] Sets alarm level for voltage failure to Warning
RED	☒	☒	[6.2] Sets alarm level for voltage failure to Error
FLASH RED	☒	☒	[6.2] Sets alarm level for voltage failure to Critical Error
ALARM REPORT	☒	☒	
NONE	☒	☒	Do not report this alarm using the frame GPI
FRAME GPI	☒	☒	Report this alarm using the frame GPI
NETWORK LINK	☒	☒	
ALARM LEVEL	☒	☒	
GREEN	☒	☒	[6.2] Sets alarm level for network link failure to No Error
YELLOW	☒	☒	[6.2] Sets alarm level for network link failure to Warning
RED	☒	☒	[6.2] Sets alarm level for network link failure to Error
FLASH RED	☒	☒	[6.2] Sets alarm level for network link failure to Critical Error
ALARM REPORT	☒	☒	
NONE	☒	☒	Do not report this alarm using the frame GPI
FRAME GPI	☒	☒	Report this alarm using the frame GPI
CF USAGE	☒	☒	
ALARM LEVEL	☒	☒	
GREEN	☒	☒	[6.2] Sets alarm level for high Compact Flash usage to No Error
YELLOW	☒	☒	[6.2] Sets alarm level for high Compact Flash usage to Warning
RED	☒	☒	[6.2] Sets alarm level for high Compact Flash usage to Error
FLASH RED	☒	☒	[6.2] Sets alarm level for high Compact Flash usage to Critical Error
ALARM REPORT	☒	☒	
NONE	☒	☒	Do not report this alarm using the frame GPI
FRAME GPI	☒	☒	Report this alarm using the frame GPI
BACKPLANE LOSS	☒	☒	
ALARM LEVEL	☒	☒	
GREEN	☒	☒	[6.2] Sets alarm level for backplane loss to No Error
YELLOW	☒	☒	[6.2] Sets alarm level for backplane loss to Warning
RED	☒	☒	[6.2] Sets alarm level for backplane loss to Error
FLASH RED	☒	☒	[6.2] Sets alarm level for backplane loss to Critical Error

GUIDE TO INSTALLATION AND OPERATION

Front Panel Menu Name	LGK	DSK	Description
ALARM REPORT	⊗	⊗	
NONE	⊗	⊗	Do not report this alarm using the frame GPI
FRAME GPI	⊗	⊗	Report this alarm using the frame GPI
VIDEO FTB	⊗	⊗	
ALARM LEVEL	⊗	⊗	
GREEN	⊗	⊗	[6.2] Sets alarm level for most downstream keyer FTB to No Error
YELLOW	⊗	⊗	[6.2] Sets alarm level for most downstream keyer FTB to Warning
RED	⊗	⊗	[6.2] Sets alarm level for most downstream keyer FTB to Error
FLASH RED	⊗	⊗	[6.2] Sets alarm level for most downstream keyer FTB Critical Error
ALARM REPORT	⊗	⊗	
NONE	⊗	⊗	Do not report this alarm using the frame GPI
FRAME GPI	⊗	⊗	Report this alarm using the frame GPI
USER PRESETS	⊗	⊗	
IMPORT	⊗	⊗	[4.15.1] Imports a configuration file (requires restart)
EXPORT	⊗	⊗	[4.15.2] Exports the active configuration
LAST	⊗	⊗	[4.15.3] Shows the name of the last configuration file that was imported
ERASE	⊗	⊗	Erases a configuration file
OPTIONS	⊗	⊗	[9] Displays the enabled options
VERSION	⊗	⊗	Displays the software version

ANNEX 2 – GPI Output Event List

GPI Output Event	LGK	DSK	Description
> NONE <	✳	✳	No event is selected
EXT REF UNLOCKED	✳	✳	External reference is unlocked
EXT REF LOCKED	✳	✳	External reference is unlocked
EXT REF MISMATCH	✳	✳	External reference mismatch with output video standard
EXT REF MATCH	✳	✳	External reference matches output video standard
PGM IN VIDEO LOSS	✳	✳	PGM IN video loss
PGM IN VIDEO PRESENT	✳	✳	PGM IN video present
PGM IN VIDEO MISMATCH	✳	✳	PGM IN video mismatch with output video standard
PGM IN VIDEO MATCH	✳	✳	PGM IN video matches output video standard
PGM IN VIDEO TIMING OUT OF RANGE	✳	✳	PGM IN timing is out of range (<-1 line with respect to PGM OUT)
PGM IN VIDEO TIMING IN RANGE	✳	✳	PGM IN timing is within range
FILL 1 VIDEO LOSS	✳	✳	FILL 1 video loss
FILL 1 VIDEO PRESENT	✳	✳	FILL 1 video present
FILL 1 VIDEO MISMATCH	✳	✳	FILL 1 video mismatch with output video standard
FILL 1 VIDEO MATCH	✳	✳	FILL 1 video matches output video standard
FILL 1 VIDEO TIMING OUT OF RANGE	✳	✳	FILL 1 timing is out of range (<-1 line with respect to PGM OUT)
FILL 1 VIDEO TIMING IN RANGE	✳	✳	FILL 1 timing is within range
KEY 1 VIDEO LOSS	✳	✳	KEY 1 video loss
KEY 1 VIDEO PRESENT	✳	✳	KEY 1 video present
KEY 1 VIDEO MISMATCH	✳	✳	KEY 1 video mismatch with output video standard
KEY 1 VIDEO MATCH	✳	✳	KEY 1 video matches output video standard
KEY 1 VIDEO TIMING OUT OF RANGE	✳	✳	KEY 1 timing is out of range (<-1 line with respect to PGM OUT)
KEY 1 VIDEO TIMING IN RANGE	✳	✳	KEY 1 timing is within range
FILL 2 VIDEO LOSS	✳	✳	FILL 2 video loss
FILL 2 VIDEO PRESENT	✳	✳	FILL 2 video present
FILL 2 VIDEO MISMATCH	✳	✳	FILL 2 video mismatch with output video standard
FILL 2 VIDEO MATCH	✳	✳	FILL 2 video matches output video standard
FILL 2 VIDEO TIMING OUT OF RANGE	✳	✳	FILL 2 timing is out of range (<-1 line with respect to PGM OUT)
FILL 2 VIDEO TIMING IN RANGE	✳	✳	FILL 2 timing is within range
KEY 2 VIDEO LOSS	✳	✳	KEY 2 video loss
KEY 2 VIDEO PRESENT	✳	✳	KEY 2 video present
KEY 2 VIDEO MISMATCH	✳	✳	KEY 2 video mismatch with output video standard
KEY 2 VIDEO MATCH	✳	✳	KEY 2 video matches output video standard
KEY 2 VIDEO TIMING OUT OF RANGE	✳	✳	KEY 2 timing is out of range (<-1 line with respect to PGM OUT)
KEY 2 VIDEO TIMING IN RANGE	✳	✳	KEY 2 timing is within range
OVERALL VIDEO TIMING OUT OF RANGE	✳	✳	At least one of the VIDEO TIMING OUT OF RANGE is true
OVERALL VIDEO TIMING IN RANGE	✳	✳	Opposite of OVERALL VIDEO TIMING OUT OF RANGE
TEMPERATURE FAILURE	✳	✳	FPGA temperature $\geq 80^{\circ}\text{C}$
TEMPERATURE OK	✳	✳	FPGA temperature $< 80^{\circ}\text{C}$
VOLTAGE FAILURE	✳	✳	At least one of 1.0V, 2.5V or 3.3V is $\pm 5\%$ out of range
VOLTAGE OK	✳	✳	All voltages are within range
NETWORK INTERFACE DOWN	✳	✳	The network interface is down
NETWORK INTERFACE UP	✳	✳	The network interface is up
CF USAGE HIGH	✳	✳	Compact Flash capacity $\geq 80\%$
CF USAGE OK	✳	✳	Compact Flash capacity $< 80\%$
BACKPLANE LOSS	✳	✳	Backplane is not connected
BACKPLANE PRESENT	✳	✳	Backplane is present
MIXER AT A	✳	✳	AB Mixer is at A
MIXER AT B	✳	✳	AB Mixer is at B
DSK1 FTB OFF	✳	✳	DSK1 Fade-to-Black is Off

GUIDE TO INSTALLATION AND OPERATION

GPI Output Event	LGK	DSK	Description
DSK1 FTB ON	☒	☒	DSK1 Fade-to-Black is On
DSK2 FTB OFF	☒	☒	DSK2 Fade-to-Black is Off
DSK2 FTB ON	☒	☒	DSK2 Fade-to-Black is On
DSK3 FTB OFF	☒		DSK3 Fade-to-Black is Off
DSK3 FTB ON	☒		DSK3 Fade-to-Black is On
DSK4 FTB OFF	☒		DSK4 Fade-to-Black is Off
DSK4 FTB ON	☒		DSK4 Fade-to-Black is On
DSK5 FTB OFF	☒		DSK5 Fade-to-Black is Off
DSK5 FTB ON	☒		DSK5 Fade-to-Black is On
DSK1 KEY OFF	☒	☒	DSK1 Keyer is Off
DSK1 KEY ON	☒	☒	DSK1 Keyer is On
DSK2 KEY OFF	☒	☒	DSK2 Keyer is Off
DSK2 KEY ON	☒	☒	DSK2 Keyer is On
DSK3 KEY OFF	☒		DSK3 Keyer is Off
DSK3 KEY ON	☒		DSK3 Keyer is On
DSK4 KEY OFF	☒		DSK4 Keyer is Off
DSK4 KEY ON	☒		DSK4 Keyer is On
DSK5 KEY OFF	☒		DSK5 Keyer is Off
DSK5 KEY ON	☒		DSK5 Keyer is On
DSK1 TMR 0	☒		DSK1 Bugclock is at zero
DSK1 TMR NON 0	☒		DSK1 Bugclock is not at zero
DSK2 TMR 0	☒		DSK2 Bugclock is at zero
DSK2 TMR NON 0	☒		DSK2 Bugclock is not at zero
DSK3 TMR 0	☒		DSK3 Bugclock is at zero
DSK3 TMR NON 0	☒		DSK3 Bugclock is not at zero
DSK4 TMR 0	☒		DSK4 Bugclock is at zero
DSK4 TMR NON 0	☒		DSK4 Bugclock is not at zero
DSK5 TMR 0	☒		DSK5 Bugclock is at zero
DSK5 TMR NON 0	☒		DSK5 Bugclock is not at zero
DSK1 IMG BUSY	☒		DSK1 Image Load is incomplete
DSK1 IMG READY	☒		DSK1 Image Load is complete
DSK2 IMG BUSY	☒		DSK2 Image Load is incomplete
DSK2 IMG READY	☒		DSK2 Image Load is complete
DSK3 IMG BUSY	☒		DSK3 Image Load is incomplete
DSK3 IMG READY	☒		DSK3 Image Load is complete
DSK4 IMG BUSY	☒		DSK4 Image Load is incomplete
DSK4 IMG READY	☒		DSK4 Image Load is complete
DSK5 IMG BUSY	☒		DSK5 Image Load is incomplete
DSK5 IMG READY	☒		DSK5 Image Load is complete
EAS RUNNING	☒		Emergency Alert System (EAS) text strap is running
EAS STOPPED	☒		Emergency Alert System (EAS) text strap is stopped
AUDIO AB AT A	☒	☒	Audio AB Mixer is at A
AUDIO AB AT B	☒	☒	Audio AB Mixer is at B
FOLLOW AB OFF	☒	☒	Audio AB mix follows video AB mix is off
FOLLOW AB ON	☒	☒	Audio AB mix follows video AB mix is on
AUDIO FTS OFF	☒	☒	Audio silence is off
AUDIO FTS ON	☒	☒	Audio silence is on
VO1 BEGIN OFF	☒	☒	Voice-over 1 starting to fade off
VO1 BEGIN ON	☒	☒	Voice-over 1 starting to fade on
VO2 BEGIN OFF	☒	☒	Voice-over 2 starting to fade off
VO2 BEGIN ON	☒	☒	Voice-over 2 starting to fade on
VO1 AT OFF	☒	☒	Voice-over 1 completed fade off
VO1 AT ON	☒	☒	Voice-over 1 completed fade on

GPI Output Event	LGK	DSK	Description
VO2 AT OFF	✳	✳	Voice-over 2 completed fade off
VO2 AT ON	✳	✳	Voice-over 2 completed fade on
FOLLOW FTB OFF	✳	✳	Audio silence follows video fade-to-black is off
FOLLOW FTB ON	✳	✳	Audio silence follows video fade-to-black is on
EMBED AUDIO LOSS FEED 1 CHANNEL 1	✳	✳	Loss of embedded audio on this feed and channel
EMBED AUDIO PRESENT FEED 1 CHANNEL 1	✳	✳	Presence of embedded audio on this feed and channel
Repeat for Feed 1 Channels 2 to 16	✳	✳	
EMBED AUDIO LOSS FEED 2 CHANNEL 1	✳	✳	Loss of embedded audio on this feed and channel
EMBED AUDIO PRESENT FEED 2 CHANNEL 1	✳	✳	Presence of embedded audio on this feed and channel
Repeat for Feed 1 Channels 2 to 16	✳	✳	
EMBED AUDIO UNEXPECTED TYPE FEED 1 CHANNEL 1	✳	✳	Unexpected audio type on this embedded feed and channel
EMBED AUDIO EXPECTED TYPE FEED 1 CHANNEL 1	✳	✳	Expected audio type on this embedded feed and channel
Repeat for Feed 2 Channels 2 to 16	✳	✳	
EMBED AUDIO UNEXPECTED TYPE FEED 2 CHANNEL 1	✳	✳	Unexpected audio type on this embedded feed and channel
EMBED AUDIO EXPECTED TYPE FEED 2 CHANNEL 1	✳	✳	Expected audio type on this embedded feed and channel
Repeat for Feed 2 Channels 2 to 16	✳	✳	
AES AUDIO LOSS PAIR 1 CHANNEL 1	✳	✳	Loss of AES audio on this feed and channel
AES AUDIO PRESENT PAIR 1 CHANNEL 1	✳	✳	Presence of AES audio on this feed and channel
AES AUDIO LOSS PAIR 1 CHANNEL 2	✳	✳	Loss of AES audio on this feed and channel
AES AUDIO PRESENT PAIR 1 CHANNEL 2	✳	✳	Presence of AES audio on this feed and channel
Repeat for AES pairs 2 to 4	✳	✳	
AES AUDIO UNEXPECTED TYPE PAIR 1 CHANNEL 1	✳	✳	Unexpected audio type on this AES pair and channel
AES AUDIO EXPECTED TYPE PAIR 1 CHANNEL 1	✳	✳	Expected audio type on this AES pair and channel
AES AUDIO UNEXPECTED TYPE PAIR 1 CHANNEL 2	✳	✳	Unexpected audio type on this AES pair and channel
AES AUDIO EXPECTED TYPE PAIR 1 CHANNEL 2	✳	✳	Expected audio type on this AES pair and channel
Repeat for AES pairs 2 to 4	✳	✳	