DENSITÉ series

KMV-3901-8x2
Kaleido-Modular 3Gbps/HD/SD Multi-Viewer
Guide to Installation and Operation

M866-9900-100

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Electromagnetic Compatibility

This equipment has been tested for verification of compliance with FCC Part 15, Subpart B requirements for Class A digital devices.

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

This equipment has been tested and found to comply with the requirements of the EMC directive 2004/108/CE:

- EN 55022 Class A radiated and conducted emissions
- EN 61000-4-2 Electrostatic discharge immunity
- EN 61000-4-3 Radiated, radio-frequency, electromagnetic field immunity
- EN 61000-4-8 Power-frequency magnetic field immunity
- EN 61000-4-11 Voltage dips, short interruptions and voltage variations immunity

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1.1 Introduction

Kaleido-Modular is the most space and energy efficient multi-viewer system, with up to 20 multi-viewer outputs per 3RU frame, consuming only 300 Watts in total. It also offers super silent operation, outstanding picture quality, and expansion up to 288 multi-viewer outputs when connected to an upstream router.

The KMV-3901-8x2 Multi-Viewer card is the central building block of the Kaleido-Modular system.

1.2 Features

UNMATCHED SPACE EFFICIENCY

- 20 quad-splits, or ten 8-input KMV-3901-8x2 multi-viewer cards, per 3RU frame
- Fully loaded frame with 20 cards weighs only 8.6 kg (19 lbs)

LOW POWER CONSUMPTION

- 300 Watts for fully loaded 3RU frame with 10 cards and up to 20 outputs
- 24 Watts per dual-output card

SUPER SILENT

- Ideal for installation within studios, control rooms and trucks

HIGH QUALITY, FLEXIBLE MONITORING

- Outstanding multi-viewer picture quality, based on award-winning Kaleido-X technology, with all essential display elements for production
- Choice of single multi-viewer output per card with up to 8 pictures, or dual quad-split displays

ROUTER INTEGRATION

- Tight integration with NVISION and third party routers allows expansion up to 1152 inputs and 288 multi-viewer outputs
- Multiple multi-viewer outputs can be controlled from a single panel

MIX AND MATCH CARD FUNCTIONS

- Kaleido-Modular multi-viewer cards can be installed in a 3RU frame with other Densité Series cards, such as signal processors and DAs, for maximum space and cost-effectiveness

ULTRA-RESILIENT

- Hot-swappable cards with Auto-Recovery for configuring ‘cold’ replacement cards during maintenance
- 3RU frame features dual hot-swappable power supplies and fans plus redundant Ethernet

3Gbps / HD / SD OPERATION

- Triple rate, future-proof performance

1.3 Block Diagram

The following block diagram shows the functionality of the KMV-3901-8x2.

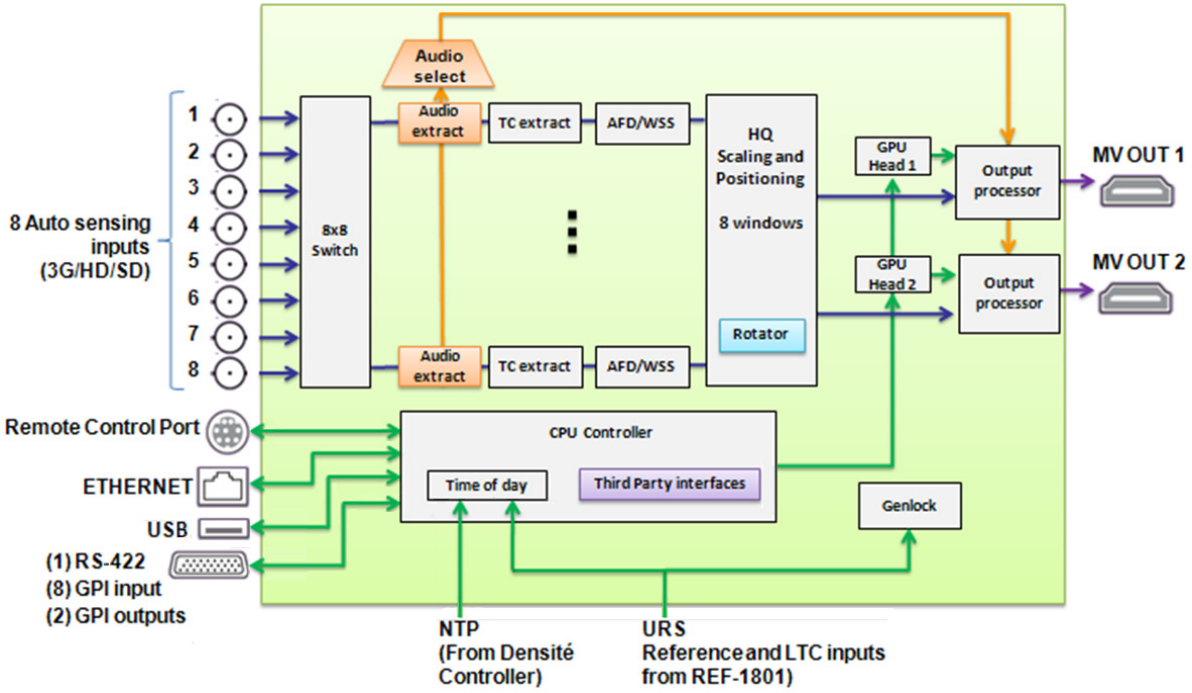


Figure 1.1 *Functional block diagram of the KMV-3901-8x2*

1.4 Front Card-edge Interface

The front card-edge of the KMV-3901-8x2 incorporates several operational elements:

- Select Button (see section 3.3)
- Status LED (see section 3.2.1)
- CPU Status LED (see section 3.2.2)
- Boot LED (see section 3.2.3)
- Power LED (see section 3.2.4)
- SDI LEDs (8) (see section 3.2.5)
- USB connector (see section 2.4)

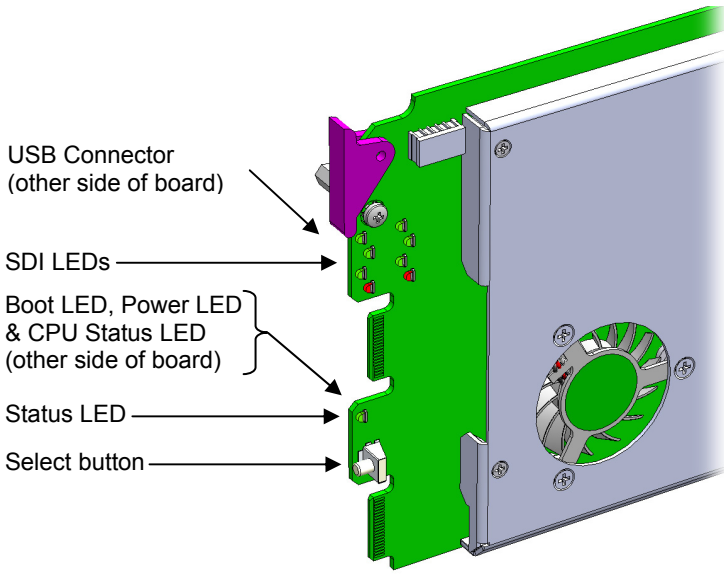


Figure 1.2 *Front card-edge layout*

2 Installation

2.1 Unpacking

Make sure the following items have been shipped with your KMV-3901-8x2. If any of the following items are missing, contact your distributor or Miranda Technologies Inc.

- KMV-3901-8x2 3Gbps/HD/SD Multi-Viewer
- KMV-3901-8X2-3DRP Rear Panel (see figure 2.1)

2.2 Installation in the Densité frame

The KMV-3901-8x2 and its associated rear connector rear panel must be mounted in a **Densité 3** frame or a **Densité 3 mini** frame.

- It is not necessary to switch off the frame's power when installing or removing the card.

See the Densité 3 frame manual or the Densité 3 mini frame manual for detailed instructions on installing cards and their associated rear panels.

Note: *A Densité frame housing a KMV-3901-8x2 multi-viewer card must have a controller card (Densité CPU-ETH2 Enhanced Ethernet Controller Card) with* ***firmware version 2.0.4 or later****. A controller with an earlier version of the firmware cannot provide a time reference to the multi-viewer card.*

2.3 Rear Connector Panel

The KMV-3901-8x2 requires a dual-slot-width rear panel:

- Eight 3G/HD/SD inputs (BNC connectors)
- Two Multi-Viewer outputs (HDMI connectors)
- One DB-26 connector for GPI I/O lines (8 in / 2 out) and RS-422 control
  (Miranda's NSH26M wiring terminal adapter can be used to connect the GPI lines to this connector)
- One RJ-45 for data transfer over Ethernet
- Remote Control support (via dual RS-232 interface on a mini-DIN 8-pin connector)

With the double-width rear panel installed in a Densité-3 frame, the KMV-3901-8x2 must be installed in the right-most of the two slots covered by the panel in order to mate with the panel's connectors.

In a Densité 3 mini frame, the card must be placed in the bottom slot.

If it is placed in the wrong slot, the front panel LED will flash red. Move the card to other slot for correct operation. No damage will result to the card if this occurs.

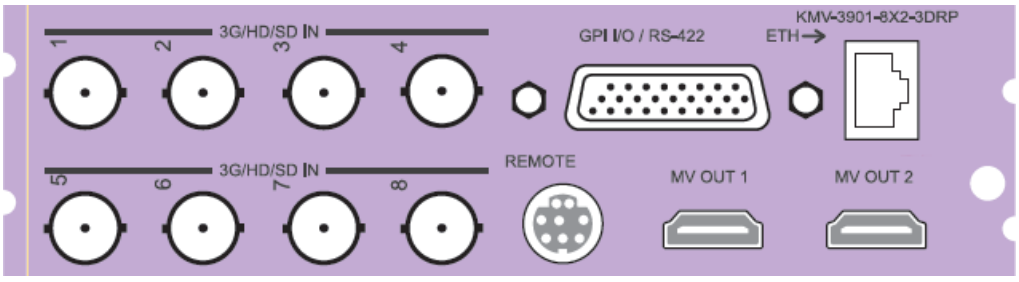


Figure 2.1 *KMV-3901-8X2-3DRP Rear Panel*

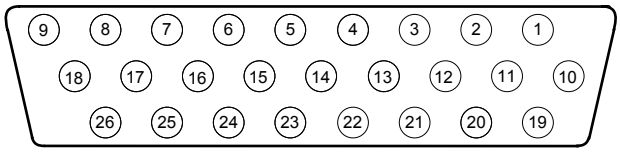
2.3.1 Ethernet Port

The Ethernet port must be configured before it can be used to download files into the KMV-3901-8x2. See section 3.4.4.

2.3.2 GPI / RS-422 Connector

The DB-26 GPI connector carries 8 GPI IN and 2 GPI OUT lines, plus the RS-422 interface. The pinout of this connector is:

Pin	Function	Pin	Function
1	422 TX+	14	GPI IN6
2	422 RX+	15	GND
3	GPI IN2	16	GND
4	GND	17	GND
5	GPI IN7	18	OUT 2+ (collector)
6	NC	19	GND
7	OUT 1-(emitter)	20	GND
8	GND	21	GPI IN3
9	NC	22	GPI IN5
10	422 TX -	23	GPI IN8
11	422 RX -	24	NC
12	GPI IN1	25	OUT 1+ (collector)
13	GPI IN4	26	OUT 2- (emitter)

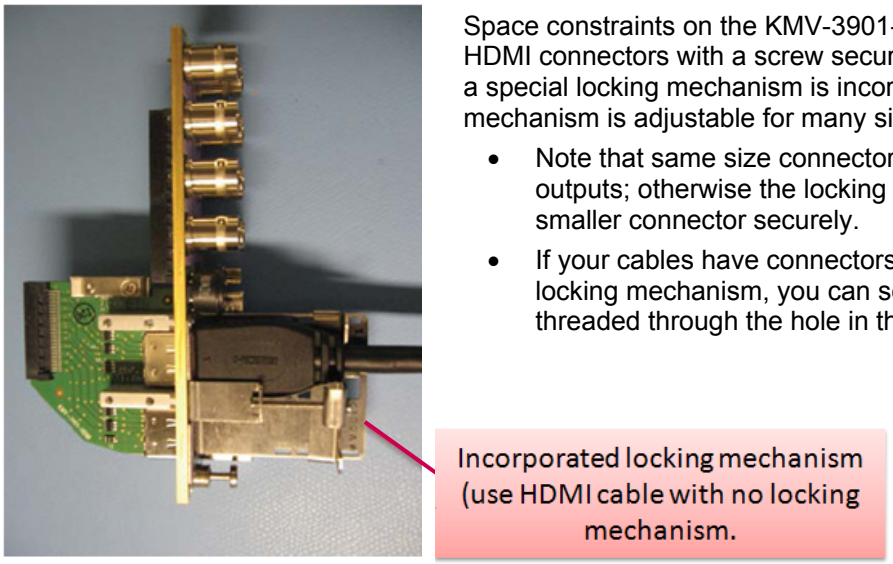


Note: *Miranda's NSH26M wiring terminal adapter can be used to connect the GPI and RS-422 lines to this connector.*

The NSH26M comes with a label that identifies the pinout to make wiring easy.

2.3.3 Output Connectors (2)

Connect these outputs (MV OUT 1 and MV OUT 2) to video displays using HDMI cables.



Space constraints on the KMV-3901-8x2 rear module do not allow HDMI connectors with a screw securing mechanism. For this reason, a special locking mechanism is incorporated on the rear panel. The mechanism is adjustable for many sizes of cables and shells.

- Note that same size connectors should be used for both HDMI outputs; otherwise the locking mechanism will not hold the smaller connector securely.
- If your cables have connectors that will not fit the special locking mechanism, you can secure them with a cable wrap threaded through the hole in the bracket.

Figure 2.1 *Kaleido-Modular special locking mechanism*

2.3.4 Remote Connector

(Future use)

2.4 USB connector on front card edge

This USB connector is accessible when the front panel of the Densité frame is open.

The USB connector is used for the following tasks.

- Upgrading the Kaleido-X Software and KMV-3901-8x2 firmware, by using a USB key prepared with the appropriate upgrade package. Refer to the Kaleido-X Release Notes for details.
- Controlling some features on the monitor wall, by using a mouse or an external keyboard (e.g. showing or hiding the monitor wall dashboard, dismissing the confirmation message that appears at the end of the upgrade process, updating static text in a layout). Refer to the Kaleido-X User's Manual for details.

Note: The KMV-3901-8x2 does not support USB hubs. Only one USB device (USB key, mouse or keyboard) can be connected at a time. If an externally powered USB hub is connected to the KMV-3901-8x2, then a mouse connected to the hub will not work. Similarly, multi-function keyboards or numeric keypads that have a built-in USB hub also do not work when connected to the KMV-3901-8x2. Use a standard keyboard or keypad, and connect it to the KMV-3901-8x2 directly when needed.

3 Operation

3.1 Control options

The KMV-3901-8x2 can be controlled in different ways:

- On the Densité frame, the local control panel and its buttons can be used to navigate menus and adjust parameter values (see section 3.3).
- Miranda's iControl system can be used to access the card's operating parameters from a remote computer, using a convenient graphical user interface (see section 3.4).
- The loading and management of layouts is handled via a dedicated Java-based application, XEdit, accessed through a dedicated Ethernet port (see the Kaleido-X User's Manual).
- A GPI interface allows remote layout selection.
- The output resolution of the card can be controlled automatically through the EDID interface with the display.
- The Kaleido-RCP2 remote control panel allows you perform operations on the monitor wall, either by itself or in association with an external keyboard and a mouse. Refer to the Kaleido-RCP2, and Kaleido-X documentation (available on the DVD that shipped with your system).

3.2 Card-Edge LEDs

3.2.1 Status LED

The Status LED is located on the front card-edge of the KMV-3901-8x2, immediately above the Select button, and is visible through the front access door of the Densité frame. This multi-color LED indicates the status of the KMV-3901-8x2 by color, and by blinking/steady illumination:

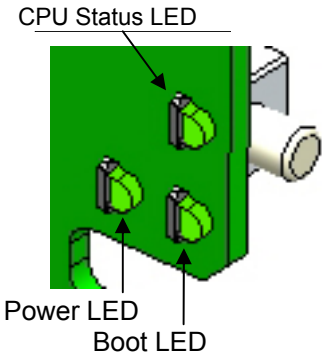
LED	Meaning
Green	Normal
Blinking Yellow	Booting (or the card is selected for local control)
Red	No Ethernet / SD card error
Blinking red	Fan failure / no rear / duplicate IP address

The Status LED always shows the most severe detected error status that it is configured to display (see section 3.4.5), and in the table above error severity increases from top to bottom, with green representing no error/disabled, and blinking red the most severe error.

If the Status LED is blinking yellow, it means that the card is selected for local control using the Densité frame's control panel, or that the card is booting up. See section 3.3 for details.

3.2.2 CPU Status LED

Monitors the status of the CPU operation.



LED	Meaning
Green	OK
Red	CPU kernel error

3.2.3 Boot LED

Monitors the status of the system firmware.

LED	Meaning
Blinking Green	System OK (“heartbeat” signal)
Steady Red	Beginning of start-up process (normal) Continuous - error
Steady Green or OFF	Software not running

3.2.4 Power LED

Monitors the status of the power on board the KMV-3901 card.

LED	Meaning
Green	OK
Red	Error detected This is a latched error and will remain displayed until the next reboot, even if the error was a brief glitch and the supply is OK. If the LED remains red after a restart, there is or has been a fault in the power source.

3.2.5 SDI LEDs

This group of eight LEDs monitors the status of the eight inputs to the KMV-3901-8x2 card. The frame door must be open in order for the LEDs to be visible.

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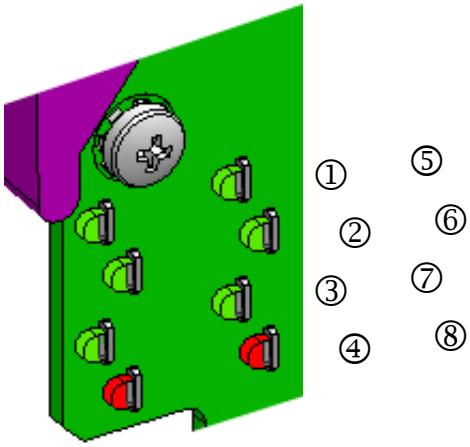


LED	Meaning
Green	Input SDI signal detected
Red	Error - no input signal detected

3.3 Local control using the Densité frame control panel

3.3.1 Overview

Press the SELECT button on the KMV-3901-8x2 card edge (see section 1.4) to assign the local control panel to operate the KMV-3901-8x2. 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.

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 buttons.

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

- Pressing 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 buttons located beneath the display. The functionality of the buttons is as follows:

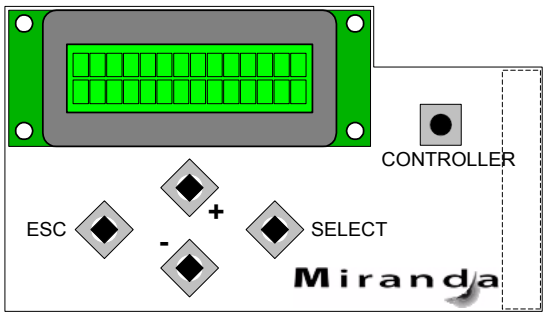


Figure 3.1 *Densité Frame local control panel*

[+] [–] Used for menu navigation and value modification.

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

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

Pressing [ESC] moves the user back up to the previous menu level. At the main menu, [ESC] does *not* exit the menu system. To exit, press the [SELECT] button on the front edge of 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. If a parameter was changed on the card but not submitted (SELECT was not pressed) and the 30 second timeout occurs, the parameters will be confirmed as if the SELECT key had been pressed.

3.3.2 Menu for local control

The KMV-3901-8x2 has operating parameters which may be adjusted locally at the controller card interface.

- Press the SELECT button on the KMV-3901-8x2 front card edge to assign the Densité frame's local control panel to the KMV-3901-8x2.
- Use the keys on the local control panel to step through the displayed menu to configure and adjust the KMV-3901-8x2.

The complete menu structure is shown in the Annex to this document, beginning on page 21.

3.4 Remote control using iControl

The operation of the KMV-3901-8x2 may be controlled using Miranda's iControl system.

- This manual describes the control panels associated with the KMV-3901-8x2 and their use.
- Please consult the iControl User's Guide for information about setting up and operating iControl.

In iControl Navigator or iControl Web, double-click a KMV-3901 icon to open the control panel.

3.4.1 The iControl graphic interface window

The basic window structure for the KMV-3901-8x2 is shown in figure 3.2.

The card type (*KMV-3901 in this example*) and the slot number where the card is installed in the Densité frame are indicated in the window's title bar.

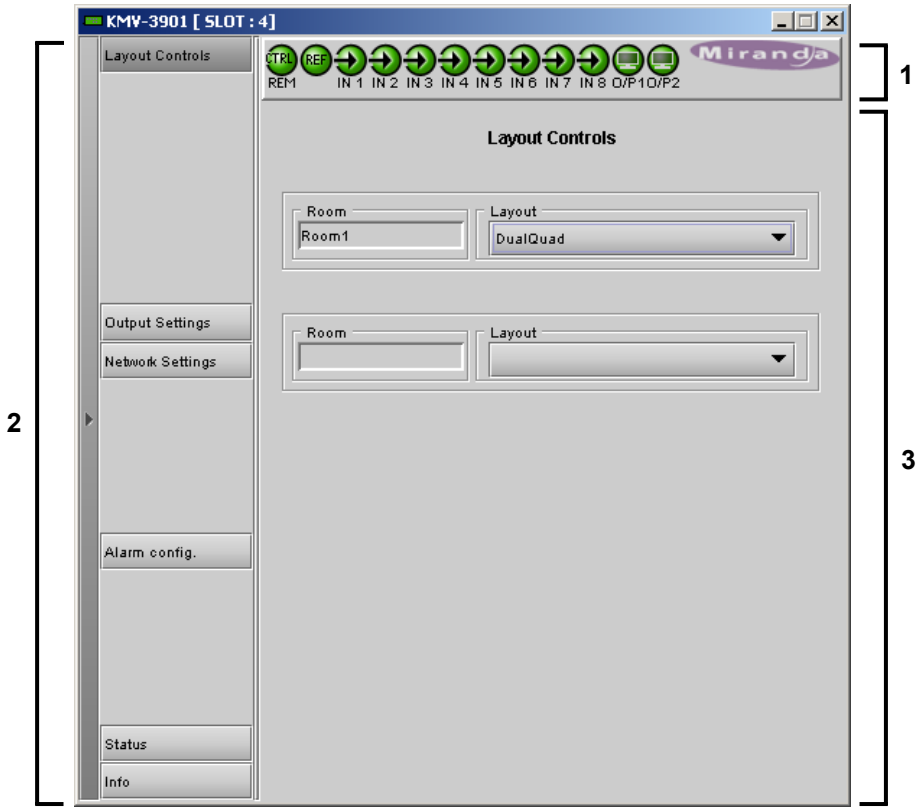


Figure 3.2 *The iControl interface for the KMV-3901*

There are three main areas in the window itself, identified in figure 3.2:

1. The Status Icon area shows a series of twelve icons that report the status of some card parameters. The meaning of the various forms that may appear is as follows:

Icon 1 – Control status

Green: Remote Control via iControl

Yellow: Local control at the Densité frame using the menu

Icon 2 – Reference status

Green: Locked to frame reference (mouse over to see format)

Red: Unavailable

Icons 3 to 10 – Status of inputs 1 to 8

Green: Input signal detected (mouse over to see details of the format)

Red: No input signal detected

Icons 11 and 12 – Status of outputs 1 and 2

Green: EDID information detected on the HDMI channel

Red: No EDID information detected on the HDMI channel

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.

2. The left-hand side of the panel contains a series of buttons that control the contents of the main window (i.e. area 3). Click on one to access the indicated controls. The selected button is highlighted (darker) and the main panel heading matches the button name.

3. This area contains the main operating controls and displays for managing the KMV-3901-8x2's feature set. The contents are selected by clicking one of the buttons on the left-hand side of the screen.

The left side of the window (i.e. area 2), can be hidden or revealed by clicking the arrow icon at the center of the left side border.

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

3.4.2 Layout Controls panel

The two ***Layout*** lists are used to select the layouts for the two Multi-viewer displays.

Some useful default layouts are stored on the KMV-3901-8x2 as shipped, for immediate use.

Additional layouts may be created in XEdit, and exported to the KMV-3901-8x2 via its rear-panel Ethernet port. This process is described in the XEdit manual.

Figure 3.3 *Layout Controls panel*

3.4.3 Output Settings panel

Set the resolution of the multi-viewer output.

The resolution of the multi-viewer outputs should be matched to the resolution of the displays they feed.

If the displays use EDID (Extended Display Identification Data) to communicate their characteristics to the KMV-3901-8x2 via the HDMI connector, the matching can be done automatically.

- The detected resolution will be displayed in the ***Detected Resolution*** box.
- Select the check box to use the detected resolution.

If the detected resolution is not used (either because the check box is not selected or because the display does not make the information available) the value selected in the *Output Resolution* list will be used.

- The user must determine the appropriate value based on the display in use.
- Each output is configured separately.

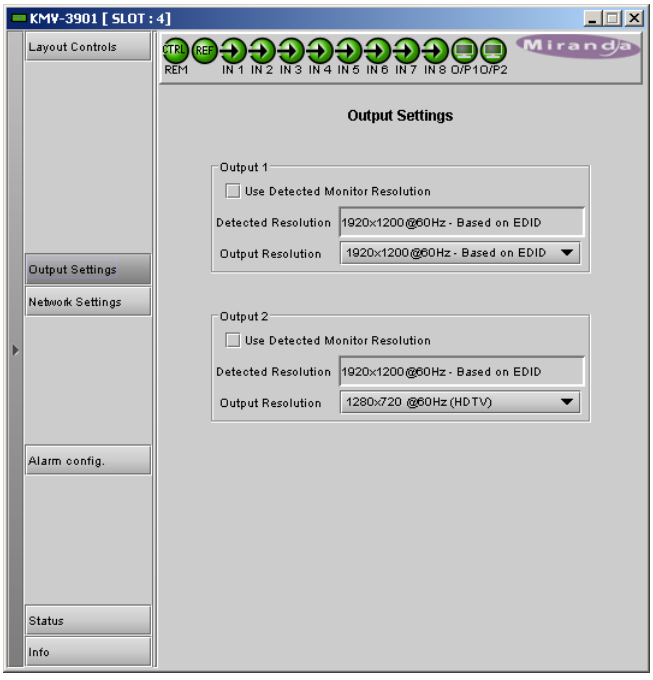


Figure 3.4 *Output Settings panel*

The following table lists some (but not all) output formats supported on the MV OUT connections. Users can customize their own timing rates through the XEdit software for resolutions ranging from 1280 × 1024 pixels up to 1920 × 1200 pixels.

Resolution	Format name	Refresh rates (Hz)
1280 × 1024	SXGA	50.00, 59.94
1280 × 1024	BARCO	59.94
1360 × 768	NEC	50.00, 59.94
1480 × 1200	Christie	50.00, 59.94
1600 × 1200	UXGA	50.00, 59.94
1920 × 1080	Baycat	50.00, 59.94
1920 × 1200	WUXGA	50.00, 59.94

3.4.4 Network Settings panel

Type in the data boxes to enter the IP address, mask and gateway for this KMV-3901-8x2 in your Ethernet network.

- These values apply to the rear-panel Ethernet port of the KMV-3901-8x2, and not to the Ethernet ports of the Densité frame.
- The KMV-3901-8x2 is shipped with default values for the IP parameters. These will not work for your network, and must be changed. You may need to consult your IT department to get the correct values.

The MAC Address is a hard-wired attribute of the KMV-3901-8x2 card, and is not configurable; the information is presented here for information only.

Click ***Apply*** to set these values into the card, or ***Cancel*** to leave the original values unchanged.

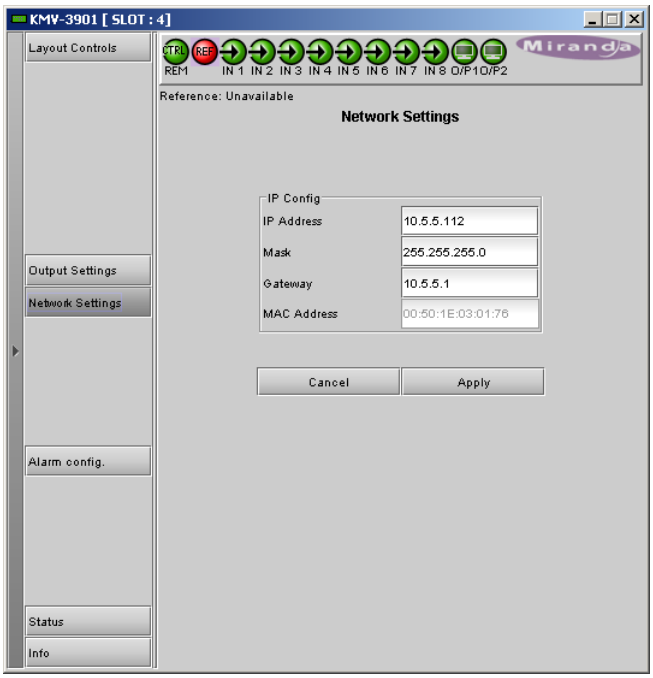


Figure 3.5 *Network Settings panel*

3.4.5 Alarm Configuration panel

This panel allows the alarm reporting of the KMV-3901-8x2 to be configured. The panel opens in a new window when the button is clicked, and can be resized if needed.

The panel is organized in columns.

Status/Name
This contains an expandable tree listing all the alarms reported by this KMV-3901-8x2 card.

- Each alarm name includes an icon that shows its current status.

The **Card LED**, **Overall alarm** and **GSM contribution** columns contain lists that allow the level of contribution of each individual alarm to the alarm named in the column heading to be set.

- N/A means the alarm is not user-configurable.

➢ ***Card LED***
This column allows configuration of the behavior of the KMV-3901-8x2's card-edge Status LED.

➢ ***Overall alarm***
This column allows configuration of the contribution of each individual alarm to the Overall Alarm associated with this card. 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.

➢ ***GSM contribution***
This column allows configuration of the contribution of each individual alarm to the GSM Alarm Status associated with this card. 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.

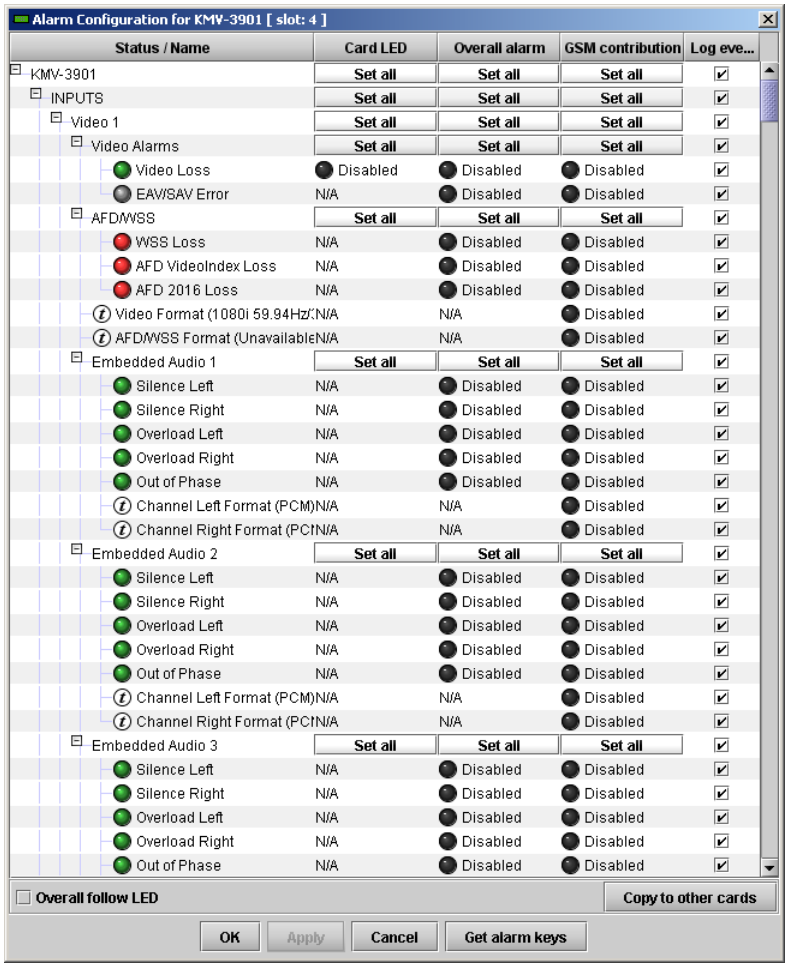


Figure 3.6 *Alarm Configuration Panel*

Levels associated with these alarms:

The 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)
Passthrough	The alarm exists but has no effect (used for text and composite alarms)

Shortcut: *Click one of the Set All buttons beside a section heading to open a menu that lets you assign a level to all alarms in that section of the column simultaneously.*

Log events

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

At the bottom of the window are several other controls:

Copy to other cards

Click this button to open a panel that allows the alarm configuration set for this card to be copied into another KMV-3901-8x2 card.

- Select one or more destination cards from the list in the window by selecting the check boxes, or all of them by selecting the *All* check box.

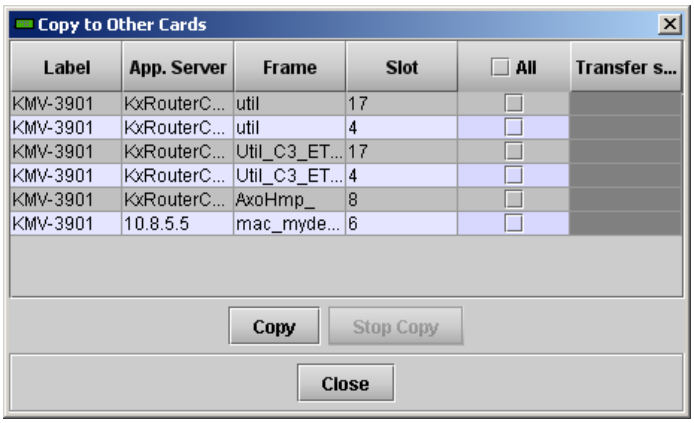


Figure 3.7 *Copy to other cards*

Get alarm keys

Click this button to save a file containing a list of all alarms on this card and their current values, along with an Alarm Key for each. The alarm keys are useful for system integration and troubleshooting.

- The file is saved in CSV format.

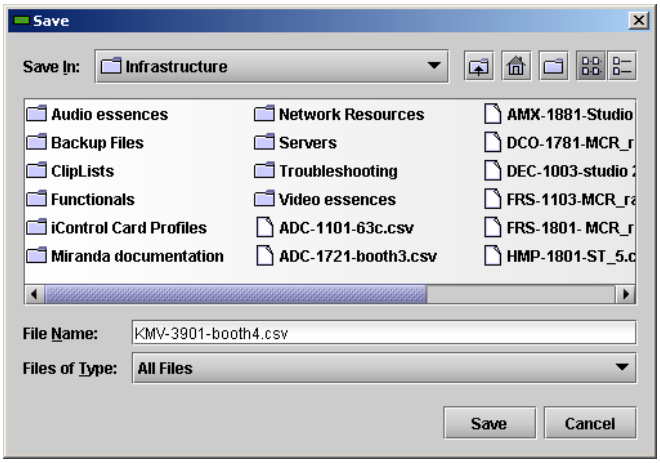


Figure 3.8 *Get alarm keys save dialogue*

OK, Apply, Cancel

- ***OK*** accepts the settings and closes the window once the card confirms that there are no errors.
- ***Apply*** accepts the settings, but leaves the window open.
- ***Cancel*** closes the window without applying any changes, and leaves the previous settings intact.

3.4.6 Status panel

This panel reports on the status of the eight video input ports, with a status icon and text description of the format for each.

Status of each of the eight GPI inputs and two GPI outputs is also reported, as “open” or “closed”.

System status is reported at the bottom of the panel:

- ***Reference status:*** icon and text description
- ***FAN:*** status of the on-card cooling fan
- ***Software version:*** text description

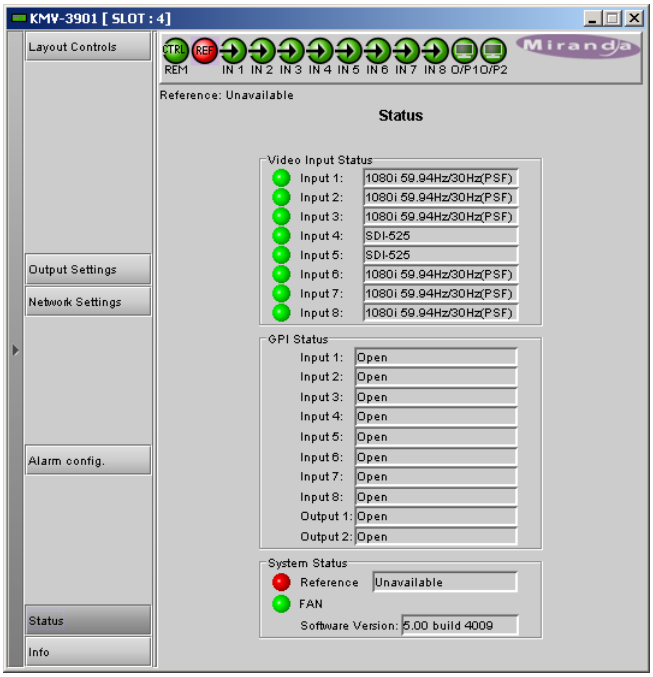


Figure 3.9 *Status panel*

3.4.7 Info panel

When the KMV-3901-8x2 is included in an iControl environment, certain information about the card should be available to the iControl system. The user can enter labels and comments that will make this card easy to identify in a complex setup. This information is entered here, into data boxes with a white background.

Label: Type the label that appear for this KMV-3901-8x2 when it appears in iControl applications.

Short Label: Type the short-form label that iControl uses in some cases (8 characters).

Source ID: Type a descriptive name for this KMV-3901-8x2.

Comments: Type any desired text.

The remaining data boxes show manufacturing information about this card.

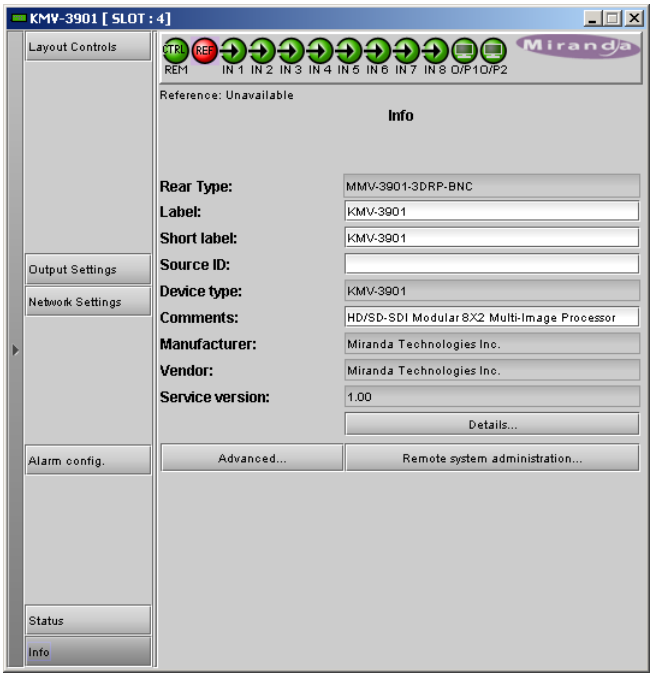


Figure 3.10 *Info panel*

Three buttons give access to additional information and controls:

- ***Details:*** Reports the Firmware version, service version, and panel version for this card.

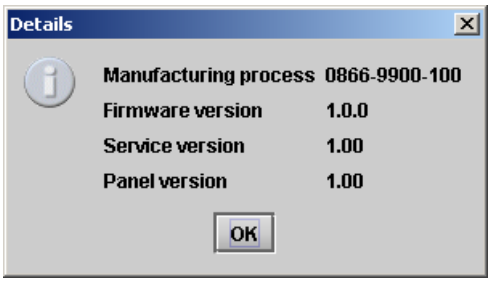


Figure 3.11 *Details window*

- ***Advanced:*** Shows the Miranda LongID for this card. The Miranda LongID is the address of this KMV-3901-8x2 in the iControl network.

Figure 3.12 *Advanced window*

- ***Remote System Administration:*** Opens the Joining Locators data box, which lists remote lookup services to which this KMV-3901-8x2 is registered.

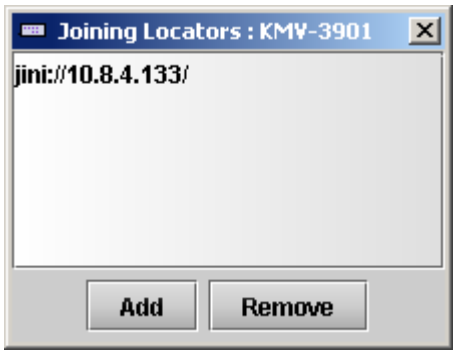
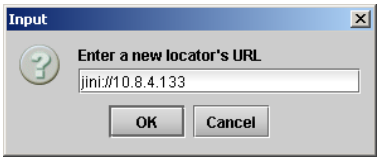


Figure 3.13 *Joining Locators window*

Add: Force the iControl service for this KMV-3901-8x2 to register itself on a user-specified Jini lookup service, by using the following syntax in the Input window:

jini://<ip_address>

where <ïp_address> is the IP address of the server running the lookup service



Remove: Select one of the services listed in the window by clicking on it, and then click *Remove* to delete it from the window.

4 Specifications

Video Input

SD-SDI:

Signal:	SMPTE 259M-C (270 Mbps), SMPTE 272M-1994
Formats:	525 and 625
Return loss:	> 15 dB up to 270 MHz
Jitter:	< 0.2 UI
Cable length:	250 m (820 ft) (Belden 8281)

HD-SDI:

Signal:	SMPTE 292M-C (1.485, 1.485/1.001 Gbps), SMPTE 272M-1994
Formats:	720p 59.94 Hz 1080p 29.97 Hz 1080i 50 Hz 1080i 59.94 Hz
Return loss:	> 15 dB up to 1.5 GHz
Jitter:	< 0.2 UI
Cable length:	100 m (328 ft) (Belden 1694A)

3G-SDI:

Signal:	SMPTE 424M-2006 (2.97, 2.97/1.001 Gbps)
Formats:	1920 × 1080p 59.94 Hz (Level A) 1920 × 1080p 50 Hz (Level A)
Return loss:	> 10 dB up to 2.97 GHz
Jitter:	< 0.2 UI
Cable length:	100 m (328 ft) (Belden 1694A)
Connector:	BNC

Graphic converted to HD-SDI from KXI-DVI-Bridge:

Signal:	SMPTE 292M-C (1.485, 1.485/1.001 Gbps)
Formats:	1024 × 768 @ 60 (XGA) 1280 × 1024 @ 60 (SXGA) 1366 × 768 or 1368 × 768 @ 60 (WXGA) 1680 × 1050 @ 60 (WSXGA+) 1600 × 1200 @ 60 (UXGA) 1920 × 1080 @ 50 or 60 (WXGA)
Cable length:	100 m (328 ft) (Belden 1694A)

Output

Mosaic (Video and graphic) on HDMI output (2)

Signal:	HDMI V1.3
Format:	1280 × 1024 up to 1920 × 1200p Configurable. Refresh rate[1] supported (50 Hz and 59.94 Hz)
Cable Length:	15 feet
Connector:	HDMI type connector
Signal Path:	8 bits output

Reference

Internal	Universal Reference from the Densité frame

GPI I/O

GPI inputs (8)

Contact closure:	GND
Protection:	up to 24V
Connector:	Terminal block interface PCB via DB-26

GPI outputs (2)

Maximum Voltage:	24V
Maximum current at 12V:	20mA (through 200 Ω series resistor)
Pulse minimum duration:	10us
Connector:	Terminal block interface PCB via DB-26

Communication

Ethernet (1)

Connector:	RJ-45

Serial port (1)

Signal:	RS-422 (SMPTE 207M, EBU-3245)
Connector:	Terminal block interface PCB via DB-26

Control

Remote control (2)

Signal:	RS-232 (2 full-duplex link)
Connector:	Mini-DIN 8-pin
Cable Length:	100 feet

[1] Please refer to the table on page 12 for a list of supported formats.

Video Processing Performance

Signal path:	8-bit YCbCr to 24-bit RGB
Processing delay:	
For 525 in frame buffer mode:	~11 ms
For 525 in frame sync mode:	~60 ms
For 625 in frame buffer mode:	~12 ms
For 625 in frame sync mode:	~72 ms

Audio Processing Performance

Quantization:	20-24 bits
Sampling:	48 kHz
THD+N:	80 dB
SNR:	98 dB

Electrical

Power consumption	24W MAX

ANNEX 1 – KMV-3901-8x2 User Interface (local menu structure)

INPUT STATUS	1 {FORMAT}**	
	2 {FORMAT}**	
	3 {FORMAT}**	
	4 {FORMAT}**	
	5 {FORMAT}**	
	6 {FORMAT}**	
	7 {FORMAT}**	
	8 {FORMAT}**	
{CARD VERSION}**		
RESOLUTION	HEAD1	{List of resolutions; * = current}**
	HEAD2	{List of resolutions; * = current}**
{LINK STATE}**		
GPIO STATUS	GPI INPUTS	LINE 1 {STATE}**
		LINE 2 {STATE}**
		LINE 3 {STATE}**
		LINE 4 {STATE}**
		LINE 5 {STATE}**
		LINE 6 {STATE}**
		LINE 7 {STATE}**
		LINE 8 {STATE}**
	GPI OUTPUTS	LINE 1 {STATE}**
		LINE 2 {STATE}**
{FAN STATUS}**		
NETWORK SETTINGS	IP ADDRESS EDIT	###.###.###.###
	NETMASK EDIT	###.###.###.###
	DEFAULT GW EDIT	###.###.###.###
	{MAC ADDRESS}**	

** Parameters shown here in braces { } will display the actual value of the item and not the text shown above