

MSB-1121

DESCRIPTION

The MSB-1121 Monitoring Switching Bridge greatly extends the functionality of the Densité series by providing a scalable and cost-effective way of monitoring the video and audio outputs of modules installed in Densité frames. The MSB supports a wide range of Densité Series distribution amplifiers, embedders / de-embedders, audio and video converters, fiber optic converters and monitoring probes. All cards showing the MSB compatible logo in the ordering information are supported by the MSB at this time. Check www.miranda.com for the latest information on MSB compatibility. When installed in slot 20 of a Densité frame, the MSB allows users to select the output of audio or video modules in the frame, and route them to a common SDI monitoring output. The MSB-1121 supports cards of any format by performing the required audio and video conversion to normalize the signal prior to the output. The MSB-1121 supports Analog, Digital or embedded audio and allows either audio follow video (AFV) or breakaway switching operation. At the output, the selected audio tracks are re-embedded in the selected video signal to simplify distribution of the monitored signal or to allow cascading of multiple frames. The MSB outputs of multiple frames can be cascaded to form a longer output monitoring bus. This cascade feature makes the MSB-1121 a truly scalable monitoring solution, allowing broadcasters to expand their monitoring capability automatically and economically as they add frames and modules.

Features and Benefits

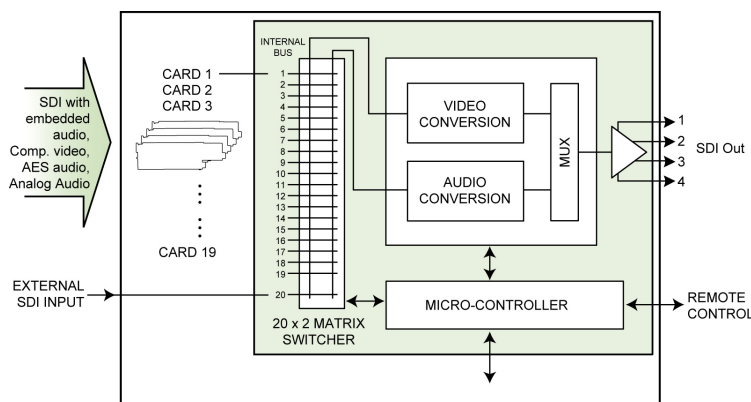
- Integrated in Densité frame to replace dedicated monitoring routers

- Monitors the output of any DA, converter, mux/demux device regardless of where it is in the signal path
- Multiple MSB equipped frames can be cascaded to form long output monitoring chains (N X 1 monitoring routing switcher)
- Size of monitoring bus scales significantly as modules and frames are added
- Built-in signal conversion allows single output monitoring of analog or digital audio and video signals seamlessly
- Powerful GUI based control with full audio follow video or breakaway operation
- Manual or automatic scan modes simplify the troubleshooting of complex problems, such as video and audio synchronization or problems involving multiples sources and processing
- GUI displays signal presence information for each of the cards connected
- GUI displays detailed signal status information for the selected input
- MSB control GUI can be run stand alone or integrated in iControl web layouts
- Optimized for local or remote monitoring.

Typical Applications

- Monitoring of incoming or outgoing lines in a large facility
- Monitoring of all DA and converter outputs in remote facility over IP
- Monitoring of all signal points in a transmission facility
- Ideal for distributed or multi-channel broadcasting operations
- Content monitoring

FUNCTIONAL BLOCK DIAGRAM



SPECIFICATIONS

OPERATION

Local control:	Switching functions are available on the control panel localized in front of the chassis
Remote control:	Intuitive control panel provide by iControl and iControl WEB
Configuration scanning mode:	From 3 to 10 sec
Card selection:	All slots
AES embedding	
Destination per frame:	Any group

PHYSICAL

Card type:	Standard Densité card with mezzanine
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SPECIFICATIONS (cont'd)

Slot positioning: Slot #20 (Exclusively)

PROCESSING PERFORMANCE

AUDIO MUX /DEMUX FUNCTION

Audio demux: 1 AES from any group (digital only)
Audio mux: 1 AES to any group (digital or analog)

INTERNAL INPUT

Signal (19):
Digital video: SMPTE-259M-C with embedded audio SMPTE 272M-C
Digital audio: AES3
Analog video: NTSC (525/60) SMPTE 170MPAL PAL-M, PAL-N, (625/50) ITU-R BT.470-6SECAM
Analog audio: Broadcast signal L or R or L+R channel

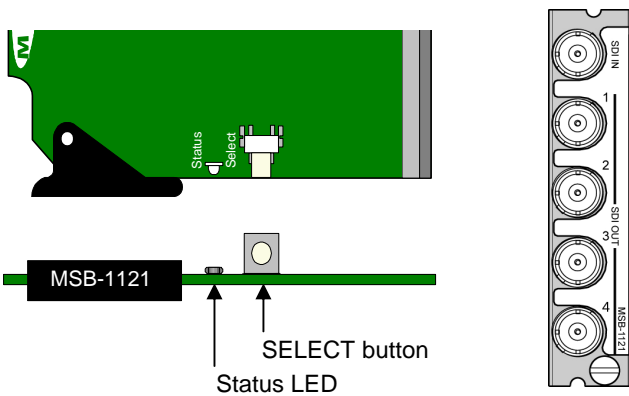
EXTERNAL SDI INPUT

Signal (1): SMPTE-259M-C with embedded audio SMPTE 272M- C
Cable length: 50 m at 270Mbps Belden cable 1694A
Return loss: >15 dB up to 270 MHz

SDI OUTPUT

Signal (4): SMPTE-259M-C with embedded audio SMPTE 272M-C
Return loss: >15 dB up to 270 MHz
Jitter: <0.2 UI p-p (WIDEBAND)
Signal path: 10 bits

POWER: 5 W



MSB-1121 Front Card Edge and Rear Connector Panel

INSTALLATION

Make sure the following items have been shipped with your MSB-1121. If any of the following items are missing, contact your distributor or Miranda Technologies Inc.

- * MSB-1121 Monitoring Switching Bridge
- * MSB-1121 Rear Connector Panel (see figure)

The MSB-1121 and its associated rear connector panel must be mounted **in slot 20** of a DENSITÉ frame – the right-most slot of the frame. It cannot be operated if installed in any other slot. It is not necessary to switch off the frame's power when installing or removing the MSB-1121. See the DENSITÉ Frame manual for detailed instructions for installing cards and their associated rear panels.

OPERATION

Overview

The DENSITÉ frame incorporates a controller card, located in the center of the frame. The controller handles local and remote control and error reporting for all cards installed in the frame. It is equipped with an LCD display and control panel for local use (assigned to the card whose SELECT button has been pushed), and an IP connection for remote control via Miranda's iControl system (see the iControl section beginning on page 4 for complete instructions).

Local User Interface – Status Monitoring

The MSB-1121 has a STATUS LED on the front card edge, visible through the front access door of the DENSITÉ frame. This multi-color LED indicates module status by

color, and by flashing/steady illumination, according to the following chart (which also indicates fault reporting for this card on the DENSITÉ frame's serial and GPI interfaces).

	Serial Report	GPI Report	Green	Yellow	Red	Flash Red
No input signal					⊕	
No audio signal					⊕	
No rear						⊕

⊕ : Factory default.

The LED color assignments for some error conditions can be reconfigured by the user (see the menu for details).

Press the SELECT button on the MSB-1121 card-edge to show its status on the Densité frame's controller card display.

Example :

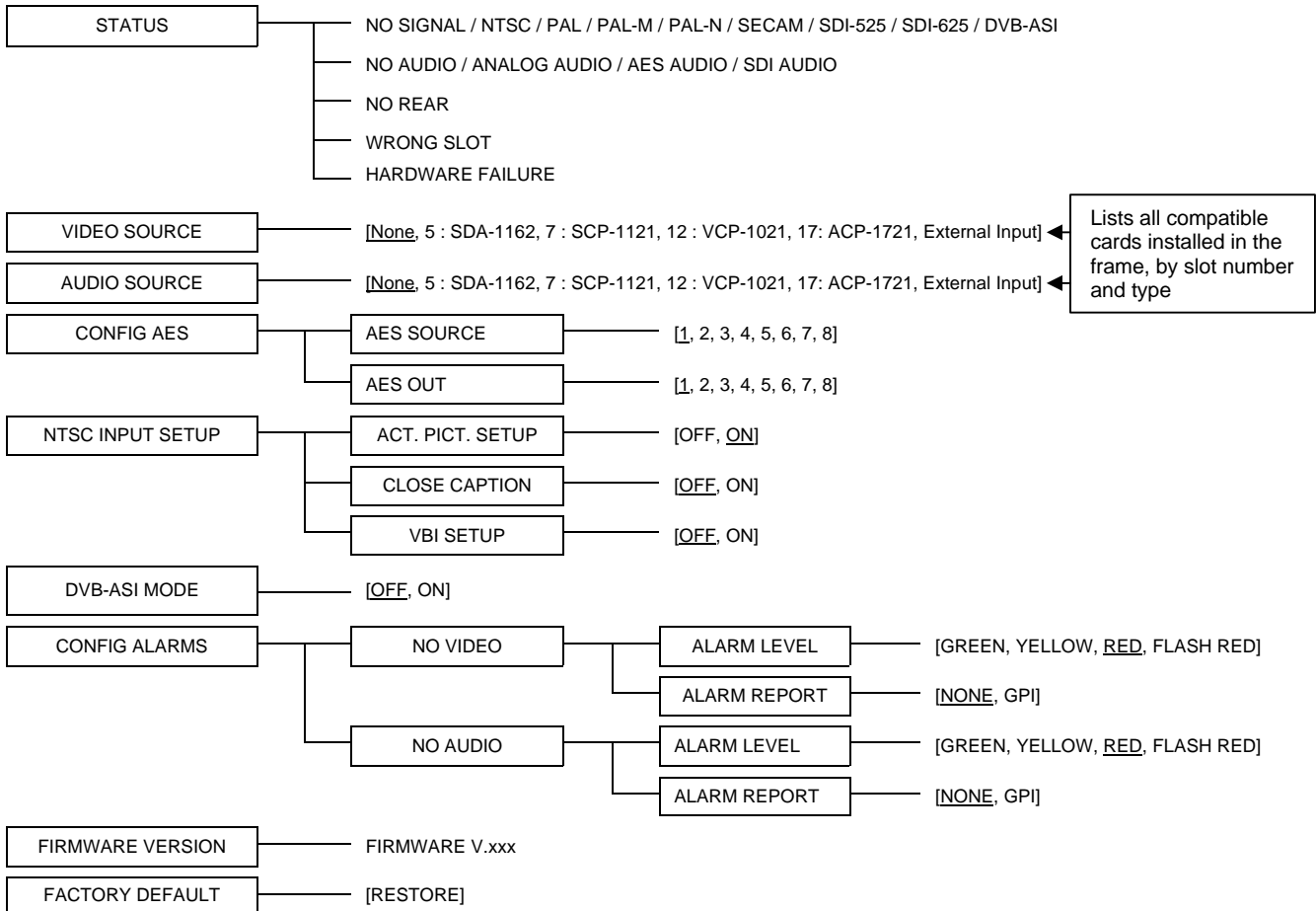
M	S	B	-	1	1	2	1												
N	O	S	I	G	N	A	L												

Use the keys on the local control panel (described in the Controller card manual) to step through the displayed error messages in the STATUS menu (the top item in the menu shown on below).

Operating Parameter Adjustment

The MSB-1121 has operating parameters that may be adjusted at the controller card interface. After pressing the SELECT button on the MSB-1121 card, use the keys on the local control panel (described in the Controller card manual) to step through the displayed menu and adjust the parameters. The menus are shown below, followed by a description of the various menu sections.

MSB-1121 Menu



Press **Select pushbutton to activate selection

STATUS menu

NO SIGNAL/NTSC/PAL/PAL-M/PAL-N/SECAM/SDI-525/SDI-625/DVB-ASI: Displays presence and format of the video input signal.

NO AUDIO/ANALOG AUDIO/AES AUDIO/SDI AUDIO: Displays presence and format of the audio input signal.

NO REAR: Indicates an absence of the rear panel or an incompatibility between the module and the rear panel. The **STATUS** led turns on flashing red.

WRONG SLOT: Indicates that the MSB-1121 is not installed in the proper slot; it must be installed in slot 20 to function.

HARDWARE FAILURE: Indicates a general hardware failure.

VIDEO SOURCE menu

NONE, (list), External Input: Selects the video input source between NONE, compatible cards installed in the frame, or the External Input. The (list) includes only compatible cards

MSB-1121 Monitoring Switching Bridge Guide to Installation and Operation

installed in the frame, showing their slot number and card type (e.g. 5 : SCP-1121).

AUDIO SOURCE menu

NONE, (list), External Input: Selects the audio input source between NONE, compatible cards installed in the frame or the External Input. The *(list)* includes only compatible cards installed in the frame, showing their slot number and card type (e.g. 17 : ACP-1721).

CONFIG AES menu

AES SOURCE: 1,2,3,4,5,6,7,8: When an AES audio source is selected, this menu selects the AES audio group to be used.

AES OUT: 1,2,3,4,5,6,7,8: This menu selects the AES audio group to be used for embedding the audio source.

NTSC INPUT SETUP menu

ACT. PICT. SETUP: enables or disables 7.5 IRE units set-up on the NTSC input video signal.

CLOSE CAPTION: enables or disables 7.5 IRE units set-up on line 21 of the video input signal.

VBI SETUP: enables or disables 7.5 IRE units set-up on the Vertical Blanking Interval of the NTSC input video signal.

DVB-ASI MODE menu

Turn the DVB-ASI mode ON or OFF

CONFIG ALARMS menu

The EAP-1101 detects errors or non-standard operating conditions for a number of parameters. This menu allows the response of the card to be set for each of these conditions.

ALARM LEVEL Associates a *STATUS* LED color (GREEN, YELLOW, RED or FLASH RED) with each error or condition.

ALARM REPORT Select *GPI* to activate an alarm relay* when an error is detected. The default value is NONE.

* Note: Alarm relay activation can only occur if the parameter GPI REPORT Is enabled in the menu of the Densité frame's controller card

FIRMWARE VERSION menu

Indicates the current firmware version.

FACTORY DEFAULT menu

Select *RESTORE* to reset all of the menu-adjustable parameters to a factory-preset state (indicated in the menu by an underline in the list of available choices).

iCONTROL INTERFACE

The MSB-1121 can be operated using Miranda's iControl system. This section describes the control panels associated with the MSB-1121 and their use.

Please consult the *iControl User's Guide* for information about setting up and operating iControl.

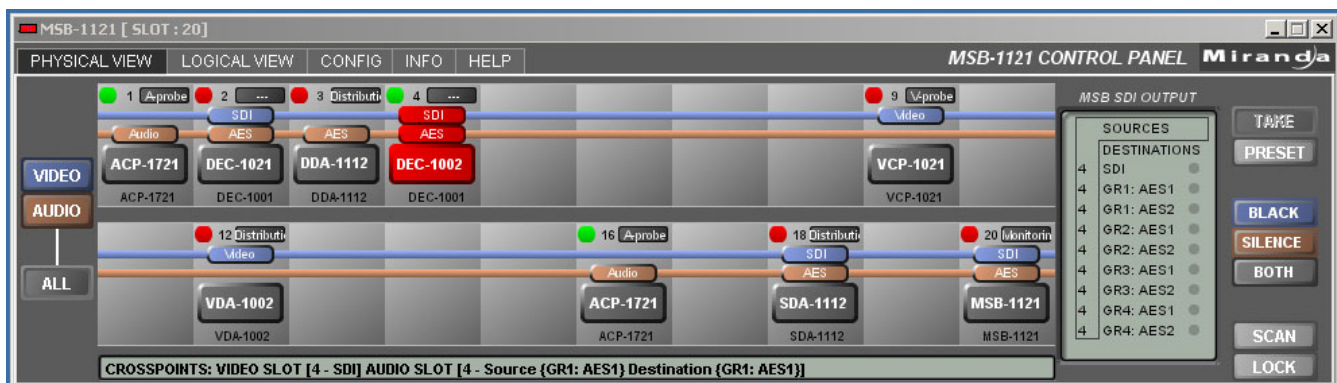
In iControl Navigator or iControl Websites, double-click on the MSB-1121 icon to open the control panel, or, right-click on the icon and select *Show Control Panel* from the pop-up menu.

The control panel opens to the **Physical View**, as shown in the figure below.

This view gives a graphical representation of the Densité frame in which the MSB-1121 is installed, showing all MSB-compatible cards installed in the frame and their location. Slots 1-10 are shown in the top row, and slots 11-20 in the bottom row. Note that the MSB-1121 is installed in slot 20, as required.

Click the **Logical View** tab at the top left to see an alternative representation, showing only the occupied slots

The Video (shown in blue) and Audio (shown in brown) busses feeding the MSB-1121 output are shown running across all the slots, and possible connections to the cards are shown, depending on card type. That is, an audio card will show a crosspoint to the Audio bus, but not to the Video bus. Some cards carry both audio and video, and can connect to either or both busses.



The MSB-1121 can connect one source to each of these busses, and the crosspoint for the selected source is shown in RED. The active crosspoints are also shown, by slot number, in the text box at the bottom of the panel.

Selecting and Deselecting Sources

Select the video and audio sources as follows:

1. Choose the type of crosspoint to be activated (video, audio or all) using the source selector at the left of the panel



Your choice will appear with a darker background and yellow text (AUDIO in the example shown here)

2. Click on the selector button representing the card that you wish to choose as the source. The button and its crosspoints (of the type selected in step 1) will turn RED, showing that they are selected.



The crosspoint will remain RED until it is deselected; the selector button will remain RED until another button is clicked.

Note that the MSB-1121 itself is a valid source, as it has an SDI input (useful for cascading MSBs in a large-scale monitoring setup)

If you try to activate a crosspoint that does not exist (e.g. you have selected ALL in step 1, and then click an Audio card in step 2), you will force the inaccessible buss (Video in this case) to Black or Silence, as discussed in step 3.

3. To deselect the source for either buss, either select a new source by following steps 1 and 2, or force the output to BLACK (video) or SILENCE (audio) by clicking on the appropriate button at the right side of the panel. The button will turn RED, indicating the output is at that status, and no card crosspoints are active.



Note that the button will also be RED if no source has been assigned to that buss, or if you have tried to assign a non-existent crosspoint to the buss.



Preset and Take

You may set up a source selection as a preset, and then activate it with a single button ("Take"). Follow these steps:

1. Click the PRESET button on the right side of the screen. The darker background and yellow text show that the Preset mode is selected.
2. Select new video and audio sources as outlined in *Selecting and Deselecting Sources*. Note that your selections (including BLACK and SILENCE) do not appear RED as they did in that case, but rather display a RED OUTLINE. The previous (and still active) selection continues to display in RED.



3. Click the TAKE button. The pre-selected crosspoints are activated, replacing the previous selection



The Preset mode remains active until you turn it off by clicking the button again.

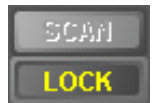
Scan and Lock

The SCAN function selects each card in sequence. The duration is configurable – see the Configuration Panel on page 7.



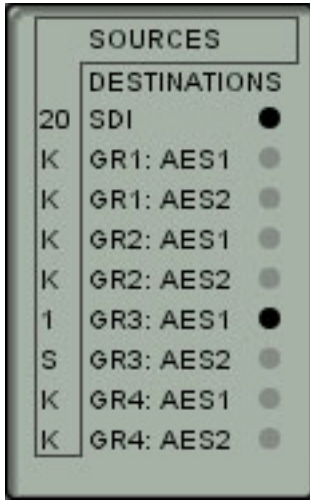
It only scans the busses indicated by the source selector at the left of the panel (i.e. Video, Audio or All). The selection on an unscanned buss remains unchanged. It also omits cards which have been selected as "excluded" in the Configuration Panel – see page 7. When SCAN is turned OFF, the selection remains as it is at that moment.

The LOCK button disables any manual crosspoint selection. Some buttons on the panel remain active, including the TAKE button, so existing Presets can be activated in the LOCK mode. New presets cannot be created, as selection buttons are locked. If the SCAN mode is active, it continues to function, even though the SCAN button is locked.



MSB SDI Output Screen

The MSB SDI OUTPUT screen on the right side of the control panel shows the sources of information (video and audio) that comprise the MSB-1121 SDI output.



- On the right, DESTINATIONS lists the various components of the SDI output signal – SDI (video), and 4 groups of AES embedded audio.
- For each destination, the output status is indicated by the status icon:
 - valid signal present
 - no signal present

- On the left, SOURCES identifies the origin of the data for each output component, as follows:
 - # a number between 1 and 20 indicates the slot number of the card that is the source of the data
 - B indicates that BLACK has been inserted into the video portion of the SDI output
 - S indicates that SILENCE has been inserted into an AES output.
 - K indicates that this AES contains no carrier because the KILL MSB OUT option has been selected in the configuration panel (see page 7)



Card Representation

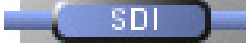
Each card mounted in the Densité frame is represented by an icon in the Physical and Logical views of the MSB-1121 control panel.


NOTE: this applies only to MSB-compliant cards. These cards are identified by the MSB-compliant logo in Miranda literature.




The card icon contains a number of different elements:

Status / Slot # / Source ID  2  kkk

Video Crosspoint & Data Type  SDI

Audio Crosspoint & Data Type  AES

Selector button (click to select)
The text on the button is the Short Label and can be changed in the card's control panel in the iControl environment

Card Type  SCP
SCP-1121

Status – shows the current status of the card's output signal

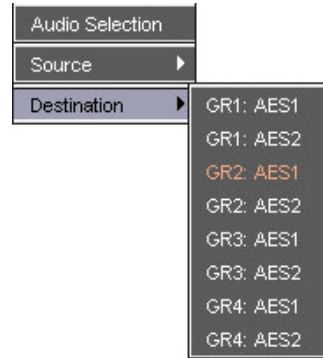
Slot # – slot in which this card is installed in the Densité frame

Source ID – a user-supplied label entered via the card's control panel

Video Data Type – shown on the video crosspoint icon, indicates the type of video signal present in the card. All types are converted into SDI for the MSB-1121 output.

Audio Data Type – shown on the audio crosspoint icon, indicates the type of audio signal present in the card. All types are converted into AES and embedded in the MSB-1121 SDI output when selected.

Note: right-click over an audio or video crosspoint to open a pull-down menu that allows you to select among available Sources and Destinations..



The Source and Destination selection can also be made at the Configuration panel, as described in the next section. See the sections Audio Source and Audio Destination on the opposite page for a discussion of the available options for audio

CONFIGURATION PANEL

Click on the CONFIG tab at the top of the window to open the configuration panel (see the figure on the opposite page).

Across the top of the window are four functions:

Extract AES from SDI Cards (Source)

- The pull-down lists all eight possibilities (AES1 and AES2 for all 4 groups)
- Click the checkbox to apply this selection to all SDI cards, overriding any selection made for an individual card in the Audio Source selection dialog (see page 7)
- If the source for any SDI card is subsequently redefined in the Audio Source selection dialog, the checkbox will be deselected.

V/A	Slot	Short Label	SRC ID	Type	Status	Scan	Audio Source	Audio Destination	Video	ASI	All	AP Setup	L-21 Setup	VBI Setup	Excluded
A	6	UAP-1781	...	UAP-1781	OK	5 sec	OUT: AES1	GR1: AES1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	8	VCP-1021	...	VCP-1021	Error	5 sec			Analog	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	9	ENC-1101	...	ENC-1101	Error	5 sec			Analog	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
V	16	ENC-1101	...	ENC-1101	Error	5 sec			Analog	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	17	VCP-1021	...	VCP-1021	Error	5 sec			Analog	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	20	MSB-1121	...	MSB-1121	Error	5 sec	GR1: AES1	GR1: AES1	SDI	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Silence	Silence						GR1: AES1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Add/Replace AES on MSB-Out (Destination)

- The pull-down lists all eight possibilities (AES1 and AES2 for all 4 groups)
- Click the checkbox to apply this selection to all SDI cards, overriding any selection made for an individual card in the Audio Destination selection dialog (see page 7)
- If the destination for any SDI card is subsequently redefined in the Audio Destination selection dialog, the checkbox will be deselected..

MSB-Out: Kill all Audio Groups except the re-embedded one (N/A in SDI-BYPASS mode)

- When the checkbox is selected (i.e. shows white), only those audio groups that have been selected to be embedded in the output will appear in their selected slots; no carrier will be present for all other audio groups.
- When the checkbox is not selected (i.e. shows black), then all audio groups on the output will be filled with audio from the selected video source, except those specifically selected from another source.

Show Tool Tips on Audio/Video Bus

Click in the box to turn ON the tool tips function, which displays source /destination information when the cursor is moved over a crosspoint in the Physical or Logical view.



Individual Card Configuration Section

The lower part of the Configuration window displays one line for each MSB-compatible card installed in the frame. The columns in this window define the card's interface with

the MSB-1121, either reporting data or allowing parameters to be changed.

From left to right, the columns are:

V/A: shows whether a card is selected as the source of video (V, shown on a blue background), audio (A, shown on brown) or both (V/A, blue/brown) for the MSB-1121 output.

- When BLACK video is selected, no video source is shown in this column.
- When audio SILENCE is selected, no audio source is shown in this column.

Slot: shows the number of the slot in which the card is installed in the Densité frame.

- SILENCE is shown as an occupied slot, but this is just a means to show the Audio Destination of silence when it is selected.

Short Label: Shows the Short Label card identification entered in the card's iControl Info panel. It appears on the selection button in the Physical and Logical views.

SRC ID: Shows the Source ID card identification entered in the card's iControl Info panel

Type: Shows the Miranda product name for the card.

Status: Shows the card status as reported by iControl, either OK (green) or Error (Red)

Scan: Shows the amount of time that this card will be selected in the Scan mode (see page 5). Click on the entry to display a pull-down that allows the value to be changed. (Choices are: OFF, 3 sec, 4 sec, . . . , 14 sec. 15 sec.)

Audio Source: Shows the audio on this card that is selected to appear at the MSB-1121 crosspoint. Click on the entry to display a pull-down that shows all the audio signals available on the card and allows the selection to be changed. The choices vary depending on the card type. The column is blank for cards with no audio

- Note that you can make the same selection from a pull-down menu that appears when you right-click the audio crosspoint icon in the Physical or Logical view.

MSB-1121 Monitoring Switching Bridge Guide to Installation and Operation

Audio Destination: Shows the location to which the selected audio will be assigned in the MSB-1121 output. As the output is embedded audio in SDI, the choices are AES1 or AES2 for any of the 4 AES groups. Click on the entry to display a pull-down that shows these choices and allows the selection to be changed. The column is blank for cards with no audio.

- Note that you can make the same selection from a pull-down menu that appears when you right-click the audio crosspoint icon in the Physical or Logical view.

Video: Shows the video format available on this card's crosspoint. Click on the entry for a pulldown allowing a selection where multiple video outputs are available.

ASI All: Click the checkbox to select the DVB-ASI input for this card. Click the checkbox in the column header to select all DVB-ASI cards in the frame.

AP setup: Click the checkbox to enable setup on the active picture (AP) in the input video.(for NTSC inputs only)

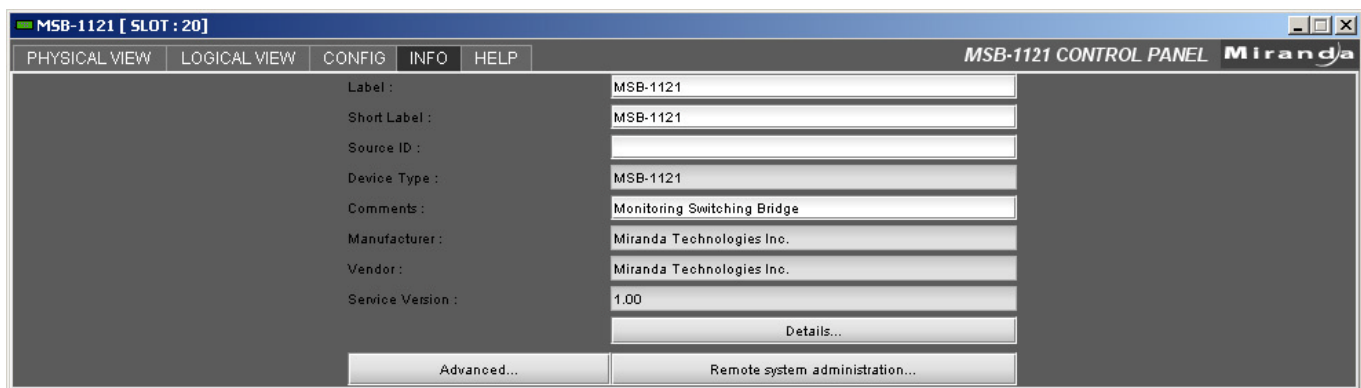
L21 Setup: Click the checkbox to enable setup on line 21 (closed captioning) of the input video.(for NTSC inputs only)

VBI Setup: Click the checkbox to enable setup in the vertical blanking interval (VBI) of the input video.(for NTSC inputs only)

Excluded: Disables selection of this card in the Physical or Logical view. The card will show in the view, but clicking it will not select it.

- Note that if a card's input is connected to the output of the MSB-1121 via the rear-panel connectors, its EXCLUDED box **MUST** be checked, because if it is selected a loop will be set up and the MSB-1121 will be uncontrollable.

INFO PANEL



Click on the INFO tab at the top of the window to open the INFO panel. This panel shows information about the MSB-1121 card, and allows the user to enter text fields that will be used to identify the card in various iControl applications.

In the panel:

- Text fields with a white background are editable. Click in the box to modify the existing contents.
- Text fields with “concave” grey backgrounds are factory-defined, and cannot be changed.
- Fields with “Convex” backgrounds and centered text are pushbuttons, and open a new window when clicked.

Label: Enter a label that will identify this MSB-1121 in various iControl displays.

Short Label: Enter a shorter form of the label in the line above. This short form will be used where space inhibits the display of the full label.

Source ID: Enter text that will identify this MSB-1121 to other iControl applications.

Device Type: MSB-1121

Comments: Enter any desired text

Manufacturer: Miranda Technologies Inc.

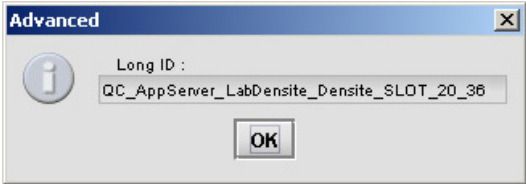
Vendor: Miranda Technologies Inc.

Service Version: The current version number of the iControl service for this MSB-1121 is displayed.

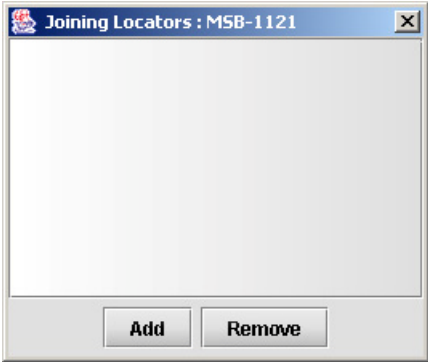
Details: This pushbutton opens a window that gives manufacturing information about this specific MSB-1121.



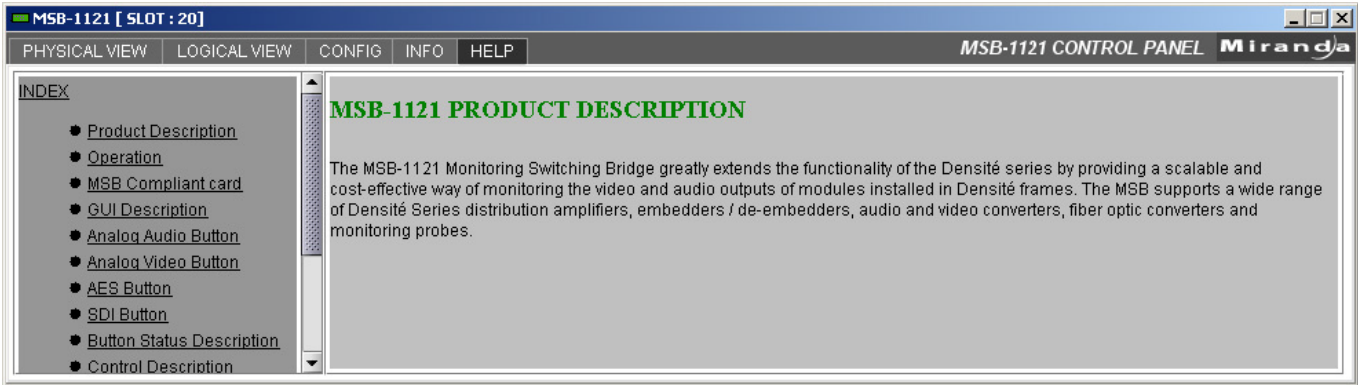
Advanced: This pushbutton opens a window that shows the Miranda LongID for this MSN-1121. The LongID is used by iControl to uniquely identify this MSB-1121. It is context sensitive, as it contains the address of the frame and slot number.



Remote System Administration: This pushbutton opens the *Joining Locators* window.



HELP PANEL



This tab gives access to the help pages for the MSB-1121.

Use the scroll bar to locate a topic of interest in the list on the left side of the panel, then click on the topic to see an explanation in the display panel on the right.

COMPLIANCE

Radio Frequency Interference and Immunity

This unit generates, uses, and can radiate radio frequency energy. If the unit is not properly installed and used in accordance with this guide, it may cause interference with radio communications. Operation with non-certified peripheral devices is likely to result in interference with radio and television reception. This equipment has been tested and complies with the limits in accordance with the specifications in:

FCC Part 15, Subpart B; CE EN50081-1:1992; CE EN50082-1:1992.

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