

AMX-1121

Description

The AMX-1121 is a high-quality embedder which embeds up to two AES/EBU 24-bit 48kHz digital audio signals into a single SMPTE 259M component serial digital video signal. It includes audio and video signal presence detection and reporting, and local or remote configuration and control. The card has built-in audio tone and video color bar test signals.

The AMX-1121 is designed for use in the DENSITÉ frame.

Video Features

- Isolated serial SDI input with automatic equalization for up to 350m of cable.
- Automatic detection of loss of input and switchover to local black for continuity of embedded audio
- Auto-detects video input format (525 or 625 lines)

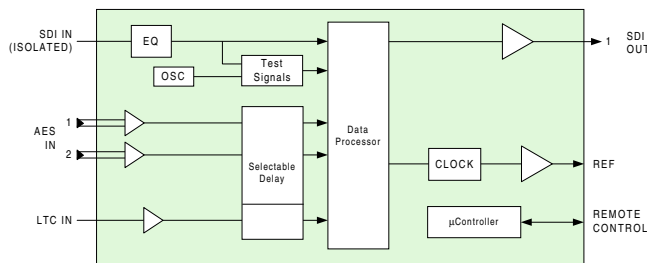
Audio Features

- AES/EBU inputs: either 110 Ω balanced or 75 Ω unbalanced, depending on rear panel in use.
- Audio group insertion / pass-through / delete.
- Selectable audio delay up to 6 fields
- 20 or 24-bit digital audio embedding.
- Left/Right channels may be swapped on each of the AES/EBU input signals
- Selectable routing of AES signals to audio groups.
- Dolby-E compatible.
- Up to 48 AES/EBU signals can be embedded in the active video area using multiple embedders in cascade.

Other Features

- Sampling of Linear Time Code (LTC) for embedding as ANC data.

FUNCTIONAL BLOCK DIAGRAM



SPECIFICATIONS

VIDEO INPUT

Video Signal: Isolated SDI SMPTE 259M-C (270 Mbps)
Cable Length: up to 350m of Belden 1694A
Return Loss: >15 dB, 5 MHz to 270 MHz

AUDIO AES-3id INPUT

Signal: AES-3id (SMPTE 276M)
Level: 0.2 to 2.0 Vp-p
Impedance: 75 Ω unbalanced

AUDIO AES3 INPUT

Signal: AES3
Level: 0.2 to 7.0 Vp-p
Impedance: 110 Ω balanced ($\pm 20\%$)

AUDIO AES SIGNAL

Sampling Rate: 48kHz synchronous
Bits: 20 or 24-bit (other bit resolutions padded to 20 or 24-bit)

SPECIFICATIONS (cont'd)

LTC SIGNAL

Signal: LTC per SMPTE 12M (or other similar signal)
Rate: 1/10 to 3x nominal LTC play speed
Impedance: > 10 k Ω (bridging 600 Ω) unbalanced
Level: 0.2 to 5Vp-p

VIDEO OUTPUT

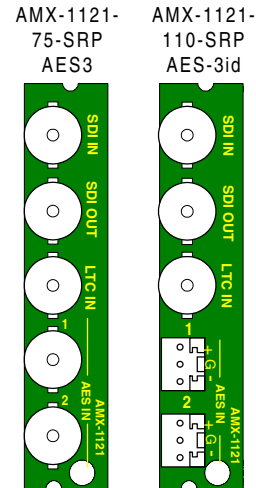
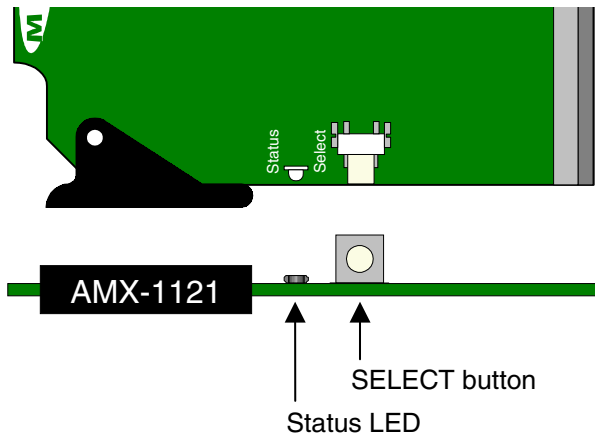
Video Signal: SDI SMPTE 259M-C
Audio embedding per SMPTE 272M-C
LTC embedding per SMPTE 291M (Proprietary Type 1-DID)
Return Loss: >15 dB, 5 MHz to 270 MHz
Wideband Jitter: < 0.2 UI p-p

PROCESSING PERFORMANCE

Signal Path: 10-bit video
20/24-bit audio
Video delay: 10.5 μ s
Audio Processing: 600 μ s audio insertion delay
Delay: (combined embedding and extraction ‡‡)
Audio Delay: Up to 6 video fields (one field steps)
LTC Processing: 8 video lines
Delay: (combined embedding and extraction ‡‡)
LTC Delay: None, or tracking of audio delay
Test Signals: Video - 75% color bars with 100% white
Audio - 1 kHz tone (R steady, L pulsed)
-18dBFS (EBU R49, R68-1995)
Power: 5 W

Note ‡‡: Applicable to combinations of AMX-1121/1141 & ADX-1121/1141

AMX-1121 2- AES/EBU Digital Audio Embedder (SDI) Guide to Installation and Operation



AMX-1121 Rear Connector Panels

INSTALLATION

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

- * AMX-1121 Digital Audio Embedder
- * AMX-1121 rear connector panel (see figure for options)

The AMX-1121 and its associated rear connector panel must be mounted in a DENSITÉ frame. It is not necessary to switch off the frame's power when installing or removing the AMX-1121.

Detailed instructions for installing cards and their associated rear panels are given in the Densité Frame manual.

OPERATION

Overview

The DENSITÉ frame incorporates a central controller card, located in the center of the frame, which is equipped with an LCD display and a control panel. The controller handles error reporting and local and remote control for all cards installed in the frame. The display and control panel are assigned to the card in the frame whose SELECT button has been pushed.

Status Monitor LED

The status monitor LED is located on the front card-edge of the AMX-1121 module, and is 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).

	REPORT		COLOR (F=flashing)			
	SERIAL	GPI	G	Y	R	FR
No errors			⊛			
No signal	⊛				⊛	
No rear						⊛
Test mode				⊛		

⊛ : Factory default. User configurable

A "Flashing Yellow" Status LED indicates that the SELECT button on the front panel has been pushed, and the controller display and control panel are now assigned to this card.

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

User Interface

Pushing the SELECT button will cause the on-card STATUS LED to flash yellow, and the card identification and the current status will be shown on the controller card's display. The STATUS LED will revert to its normal state upon a second push of the button, or after a short delay. The messages which may appear are shown in the top line of the menu chart on page 3

Example :

SELECT button pushed twice when there is no input signal connected to the rear panel and the LED is steady red:

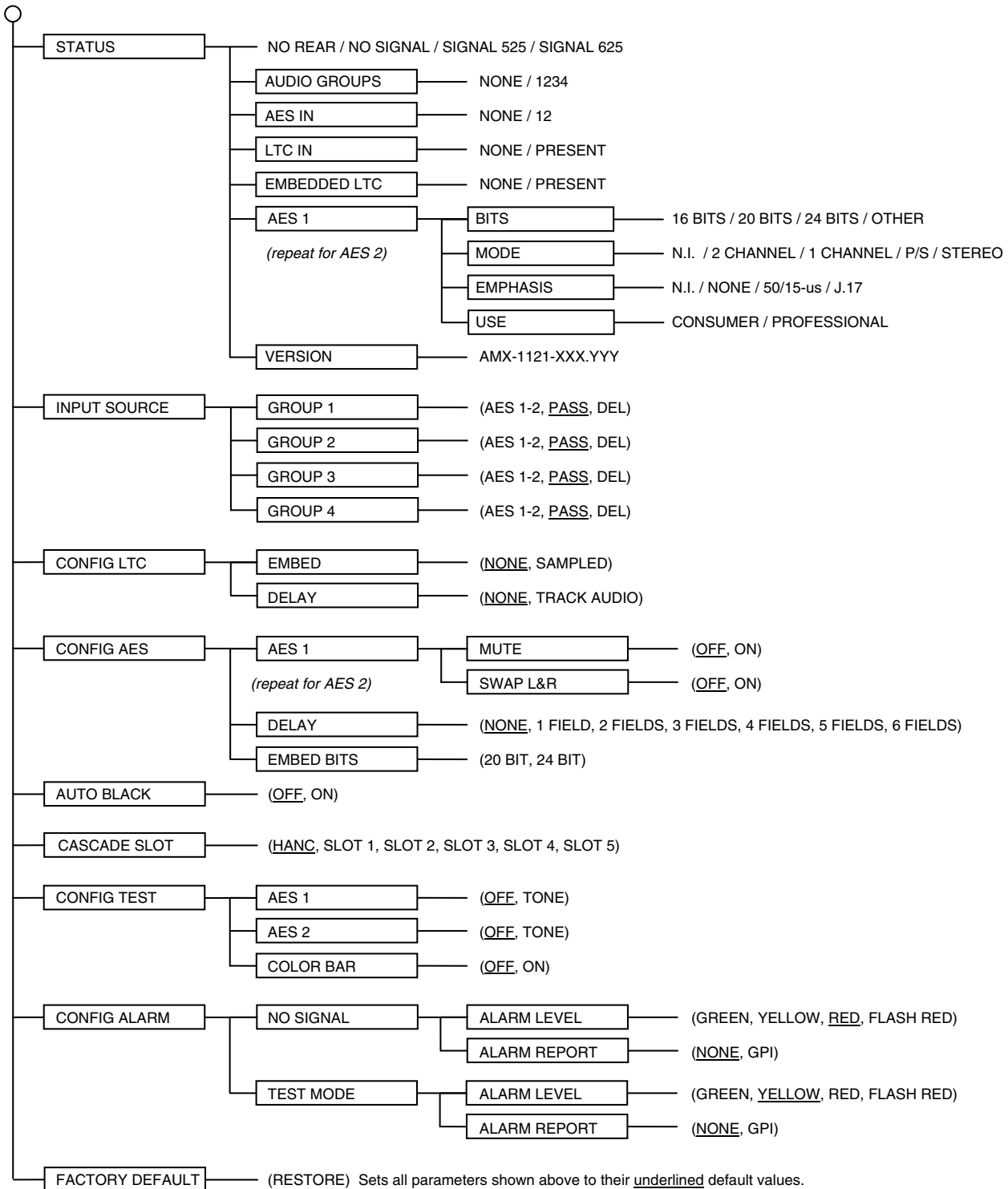
A	M	X	-	1	1	2	1								
N	O	S	I	G	N	A	L								

Use the local control panel to access the detailed status report shown in the STATUS menu on page 3.

Operating Parameter Adjustment

The AMX-1121 has operating parameters which may be adjusted at the controller card interface. After pressing the SELECT button on the AMX-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 on page 3.

AMX-1121 MENUS



AMX-1121 2- AES/EBU Digital Audio Embedder (SDI) Guide to Installation and Operation

OPERATION (continued)

INPUT SOURCE menu

GROUP1, GROUP2, GROUP3, GROUP4: Selects the source of audio for the four embedded audio groups. AES 1-2 selects audio from the AMX-1121 input. PASS leaves the incoming embedded audio group intact, passing it through to the SDI output. DEL deletes the incoming embedded audio groups, leaving the SDI output without embedded audio.

NOTE: The standard for embedded audio specifies 48 KHz sampling, synchronous to video. Audio embedders will process asynchronous audio, but there may be audible artifacts caused by the frame dropping or doubling required to fit the data into the available slots. This will affect the CRC data and status bits, causing error flags to be set that will be detected by downstream equipment.

CONFIG LTC menu

EMBED: Permits the user to pass the incoming SDI signal with embedded LTC as received (select NONE) or to insert SAMPLED LTC from the AMX-1121's LTC input.

DELAY: selectable between NONE, or tracking the audio delay as set in the CONFIG AES – DELAY menu.

CONFIG AES menu

AES 1 and AES 2: Select *MUTE:* ON or OFF, and *SWAP L&R:* ON or OFF, for each of the two AES data streams

DELAY: select the delay of the AES signal as it passes through the embedder, to NONE or a number of video fields from 1 to 6.

EMBED BITS: choose whether to embed audio as 20 bit or 24 bit audio.

AUTO BLACK menu

Turn AUTO BLACK ON or OFF. Auto Black replaces the input video with a locally-generated video black in the event of an input signal failure, to maintain audio embedding.

CASCADE SLOT menu

Audio data is normally carried in the Horizontal Ancillary data area (HANC). The cascade capability of the AMX-1121 allows multiple cards to be cascaded to insert up to 48 AES signals into slots in the active video area, with slot selection made at each embedder. Select HANC or one of 5 available slots for the output of this embedder.

CONFIG TEST menu

AES 1, 2: User can enable (TONE) or disable (OFF) a test tone (1 KHz, R-steady, L-pulsed, at –18dBFS) on each of the two AES data streams individually

COLOR BAR: User can enable (ON) or disable (OFF) color bars on the video output.

CONFIG ALARM menu

The user can configure the status LED presentation (ALARM LEVEL) and alarm reporting (NONE or GPI) for some of the fault conditions of the AMX-1121. Those not listed here are factory-set and cannot be modified by the user.

NO SIGNAL: Input errors include no signal attached to the card input, or faulty incoming SDI signal.

TEST MODE: Indicates whether test signals are present on the audio or video component of the AMX-1121 SDI output.

FACTORY DEFAULT menu

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

WARRANTIES

Miranda's Warranty and Warranty Policy are explained in full detail in the Warranty Information Sheet.

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.

CONTACT MIRANDA

Head Office

Miranda Technologies Inc.
3499 Douglas-B.-Floreani
St. Laurent (Montreal), Que. H4S 1Y6
Canada

Tel +1 (514) 333-1772
Fax +1 (514) 333-6914
Toll free: 1-800-224-9828

Miranda Europe

222, 226 Rue De Rosny
93100 Montreuil
France

+33 1 55 86 87 88
+33 1 55 86 00 29

Miranda Asia

Mita Nexus Bldg. 2F
1-3-33 Mita, Minato-Ku
Tokyo, Japan 108-0073

+81 3 5730 2988
+81 3 5730 2973

AMX-1141

Description

The AMX-1141 is a high-quality embedder which embeds up to four AES/EBU 24-bit 48kHz digital audio signals into a single SMPTE 259M component serial digital video signal. It includes audio and video signal presence detection and reporting, and local or remote configuration and control. The card has built-in audio tone and video color bar test signals.

The AMX-1141 is designed for use in the DENSITÉ frame.

Video Features

- Isolated serial SDI input with automatic equalization for up to 350m of cable.
- Automatic detection of loss of input and switchover to local black for continuity of embedded audio
- Auto-detects video input format (525 or 625 lines)

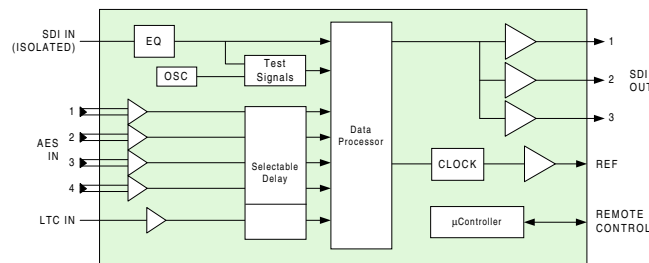
Audio Features

- AES/EBU inputs: either 110 Ω balanced or 75 Ω unbalanced, depending on rear panel in use.
- Audio group insertion / pass-through / delete.
- Selectable audio delay up to 6 fields
- 20 or 24-bit digital audio embedding.
- Left/Right channels may be swapped on each of the AES/EBU input signals
- Selectable routing of AES signals to audio groups.
- Dolby-E compatible.
- Up to 48 AES/EBU signals can be embedded in the active video area using multiple embedders in cascade.

Other Features

- Sampling of Linear Time Code (LTC) for embedding as ANC data.

FUNCTIONAL BLOCK DIAGRAM



SPECIFICATIONS

VIDEO INPUT

Video Signal: Isolated SDI SMPTE 259M-C (270 Mbps)
Cable Length: up to 350m of Belden 1694A
Return Loss: >15 dB, 5 MHz to 270 MHz

AUDIO AES-3id INPUT

Signal: AES-3id (SMPTE 276M)
Level: 0.2 to 2.0 Vp-p
Impedance: 75 Ω unbalanced

AUDIO AES3 INPUT

Signal: AES3
Level: 0.2 to 7.0 Vp-p
Impedance: 110 Ω balanced ($\pm 20\%$)

AUDIO AES SIGNAL

Sampling Rate: 48kHz synchronous
Bits: 20 or 24-bit (other bit resolutions padded to 20 or 24-bit)

SPECIFICATIONS (cont'd)

LTC SIGNAL

Signal: LTC per SMPTE 12M (or other similar signal)
Rate: 1/10 to 3x nominal LTC play speed
Impedance: > 10 k Ω (bridging 600 Ω) unbalanced
Level: 0.2 to 5Vp-p

VIDEO OUTPUT

Video Signal: SDI SMPTE 259M-C
Audio embedding per SMPTE 272M-C
LTC embedding per SMPTE 291M
(Proprietary Type 1-DID)

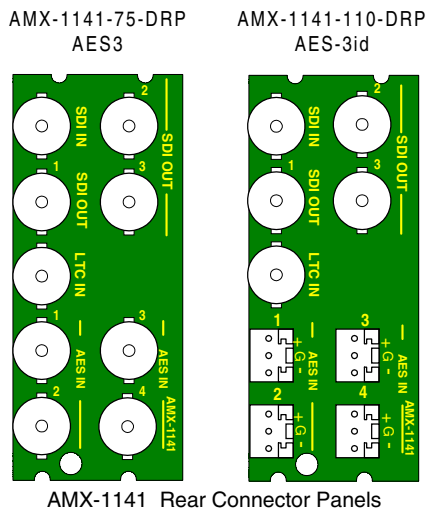
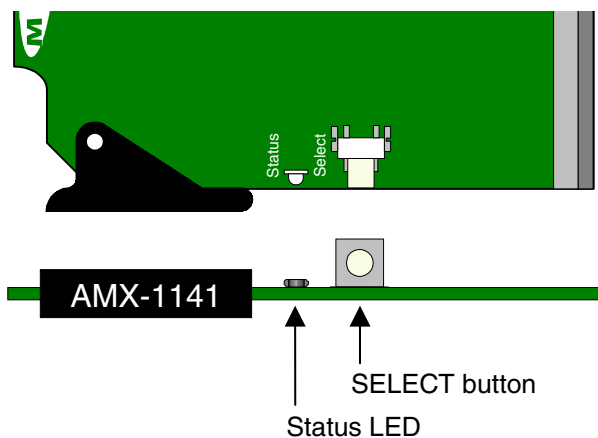
Return Loss: >15 dB, 5 MHz to 270 MHz
Wideband Jitter: < 0.2 UI p-p

PROCESSING PERFORMANCE

Signal Path: 10-bit video
20/24-bit audio
Video delay: 10.5 μ s
Audio Processing: 600 μ s audio insertion delay
Delay: (combined embedding and extraction ‡‡)
Audio Delay: Up to 6 video fields (one field steps)
LTC Processing: 8 video lines
Delay: (combined embedding and extraction ‡‡)
LTC Delay: None, or tracking of audio delay
Test Signals: Video - 75% color bars with 100% white
Audio - 1 kHz tone (R steady, L pulsed)
-18dBFS (EBU R49, R68-1995)
Power: 5 W

Note ‡‡: Applicable to combinations of AMX-1121/1141 & ADX-1121/1141

AMX-1141 4- AES/EBU Digital Audio Embedder (SDI) Guide to Installation and Operation



INSTALLATION

Make sure the following items have been shipped with your AMX-1141. If any of the following items are missing, contact your distributor or Miranda Technologies Inc.

- * AMX-1141 Digital Audio Embedder
- * AMX-1141 rear connector panel (see figure for options)

The AMX-1141 and its associated rear connector panel must be mounted in a DENSITÉ frame. It is not necessary to switch off the frame's power when installing or removing the AMX-1141.

Detailed instructions for installing cards and their associated rear panels are given in the Densité Frame manual.

The AMX-1141 has multiple audio and video inputs and outputs, and making space for all the necessary connectors requires a double-width rear panel.

The module must be installed in the right-most of the two slots covered by the rear panel in order to mate with the panel's connectors. If it is placed in the wrong slot, the card's STATUS LED will flash red. Move the card to other slot for correct operation. No damage will result to the card should this occur.

OPERATION

Overview

The DENSITÉ frame incorporates a central controller card, located in the center of the frame, which is equipped with an LCD display and a control panel. The controller handles error reporting and local and remote control for all cards installed in the frame. The display and control panel are assigned to the card in the frame whose SELECT button has been pushed.

Status Monitor LED

The status monitor LED is located on the front card-edge of the AMX-1141 module, and is 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).

	REPORT		COLOR (F=flashing)			
	SERIAL	GPI	G	Y	R	FR
No errors			⊕			
No signal	⊕				⊕	
No rear						⊕
Test mode				⊕		

⊕ : Factory default. □ : User configurable

A "Flashing Yellow" Status LED indicates that the SELECT button on the front panel has been pushed, and the controller display and control panel are now assigned to this card.

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

User Interface

Pushing the SELECT button will cause the on-card STATUS LED to flash yellow, and the card identification and the current status will be shown on the controller card's display. The STATUS LED will revert to its normal state upon a second push of the button, or after a short delay. The messages which may appear are shown in the top line of the menu chart on page 3

Example :

SELECT button pushed twice when there is no input signal connected to the rear panel and the LED is steady red:

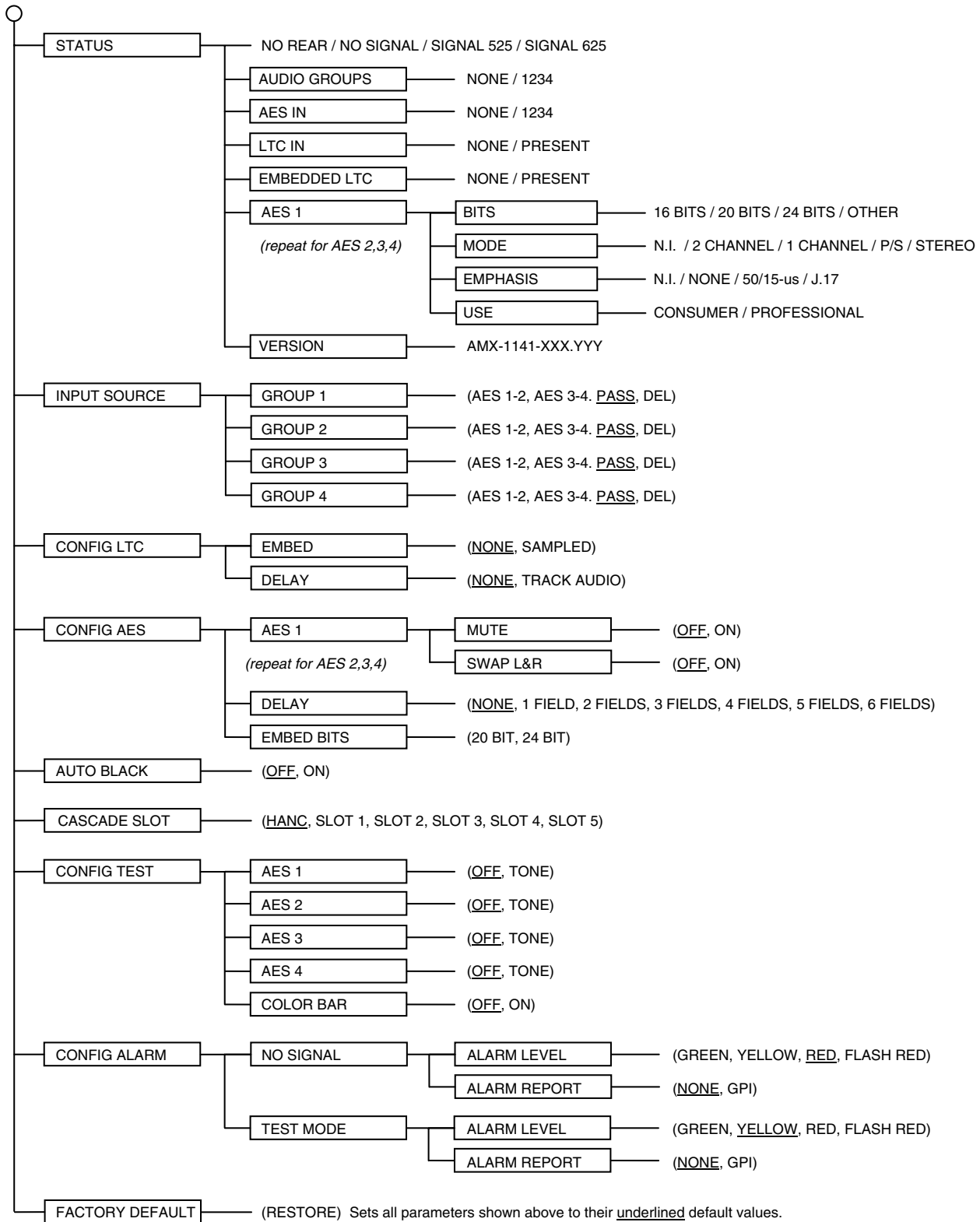
A	M	X	-	1	1	4	1								
N	O	S	I	G	N	A	L								

Use the local control panel to access the detailed status report shown in the STATUS menu on page 3.

Operating Parameter Adjustment

The AMX-1141 has operating parameters which may be adjusted at the controller card interface. After pressing the SELECT button on the AMX-1141 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 on page 3.

AMX-1141 MENUS



AMX-1141 4- AES/EBU Digital Audio Embedder (SDI) Guide to Installation and Operation

OPERATION (continued)

INPUT SOURCE menu

GROUP1, GROUP2, GROUP3, GROUP4: Selects the source of audio for the four embedded audio groups. AES 1-2 and AES 3-4 select audio from the AMX-1141 inputs. PASS leaves the incoming embedded audio group intact, passing it through to the SDI output. DEL deletes the incoming embedded audio groups, leaving the SDI output without embedded audio.

NOTE: The standard for embedded audio specifies 48 KHz sampling, synchronous to video. Audio embedders will process asynchronous audio, but there may be audible artifacts caused by the frame dropping or doubling required to fit the data into the available slots. This will affect the CRC data and status bits, causing error flags to be set that will be detected by downstream equipment.

CONFIG LTC menu

EMBED: Permits the user to pass the incoming SDI signal with embedded LTC as received (select NONE) or to insert SAMPLED LTC from the AMX-1141's LTC input.

DELAY: selectable between NONE, or tracking the audio delay as set in the CONFIG AES – DELAY menu.

CONFIG AES menu

AES 1 to AES 4: Select **MUTE:** ON or OFF, and **SWAP L&R:** ON or OFF, for each of the four AES data streams

DELAY: select the delay of the AES signal as it passes through the embedder, to NONE or a number of video fields from 1 to 6.

EMBED BITS: choose whether to embed audio as 20 bit or 24 bit audio.

AUTO BLACK menu

Turn AUTO BLACK ON or OFF. Auto Black replaces the input video with a locally-generated video black in the event of an input signal failure, to maintain audio embedding.

CASCADE SLOT menu

Audio data is normally carried in the Horizontal Ancillary data area (HANC). The cascade capability of the AMX-1141 allows multiple cards to be cascaded to insert up to 48 AES signals into slots in the active video area, with slot selection made at each embedder. Select HANC or one of 5 available slots for the output of this embedder.

CONFIG TEST menu

AES 1, 2, 3, 4: User can enable (TONE) or disable (OFF) a test tone (1 KHz, R-steady, L-pulsed, at –18dBFS) on each of the four AES data streams individually

COLOR BAR: User can enable (ON) or disable (OFF) color bars on the SDI video output.

CONFIG ALARM menu

The user can configure the status LED presentation (ALARM LEVEL) and alarm reporting (NONE or GPI) for some of the fault conditions of the AMX-1141. Those not listed here are factory-set and cannot be modified by the user.

NO SIGNAL: Input errors include no signal attached to the card input, or faulty incoming SDI signal.

TEST MODE: Indicates whether test signals are present on the video or audio components of the AMX-1141 SDI outputs.

FACTORY DEFAULT menu

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

WARRANTIES

Miranda's Warranty and Warranty Policy are explained in full detail in the Warranty Information Sheet.

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.

CONTACT MIRANDA

Head Office

Miranda Technologies Inc.
3499 Douglas-B.-Floreani
St. Laurent (Montreal), Que. H4S 1Y6
Canada

Tel +1 (514) 333-1772
Fax +1 (514) 333-6914
Toll free: 1-800-224-9828

Miranda Europe

222, 226 Rue De Rosny
93100 Montreuil
France

+33 1 55 86 87 88
+33 1 55 86 00 29

Miranda Asia

Mita Nexus Bldg. 2F
1-3-33 Mita, Minato-Ku
Tokyo, Japan 108-0073

+81 3 5730 2988
+81 3 5730 2973