SMX6811N(S)/SMX6812N(S)

AES Audio Embedding Module with AES Output

USER MANUAL

OSEE TECHNOLOGY CO., LTD.

Product Information

Model: SMX6811N(S)/SMX6812N(S) AES Audio Embedding Module with AES Output
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Company

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Contents

Chapter 1 Introduction

Overview

The SMX6811N(S) / SMX6812N(S) are AES audio embedding module with AES output. The modules all support 2 pairs (4 channels) of AES audio embedding. The user can choose input audio or other audio synthesized by system and embed them into any audio group.

Each module has its distinct feature as follows:

- The SMX6811N has 2 pairs of unbalanced AES inputs as well as 2 pairs of unbalanced outputs;
- The SMX6811NS has 2 pairs of unbalanced AES inputs as well as 2 pairs of unbalanced outputs, and audio tracking;
- The SMX6812N has 2 pairs of balanced AES inputs as well as 2 pairs of balanced AES outputs;
- The SMX6812NS has 2 pairs of balanced AES inputs as well as 2 pairs of balanced AES outputs and audio tracking.

Each module has its own features stated as Tab. 1-1:

Tab. 1-1 SMX6811N(S) / SMX6812N(S)

Module	INPUT	OUTPUT
SMX6811N	• One channel SD-SDI input • Two pairs unbalanced AES input • One channel unbalanced DARS input	• Three channels SD-SDI output with equalization and reclocking • Two pairs unbalanced AES output • One channel SD-SDI/CMP output
SMX6811NS	• One channel SD-SDI input • Two pairs unbalanced AES input • One channel unbalanced DARS input • One channel DATA IN	• Two channels SD-SDI output with equalization and reclocking • Two pairs unbalanced AES output • One channel SD-SDI/CMP output • One channel selectable SD-SDI output with equalization and reclocking
SMX6812N	• One channel SD-SDI input • Two pairs balanced AES input • One channel balanced and One channel unbalanced DARS input	• Three channels SD-SDI output with equalization and reclocking • Two pairs balanced AES output • One channel SD-SDI/CMP output
SMX6812NS	• One channel SD-SDI input • Two pairs balanced AES input • One channel balanced and One channel unbalanced DARS input • One channel DATA IN	• Two channels SD-SDI output with equalization and reclocking • Two pairs balanced AES output • One channel SD-SDI/CMP output • One channel selectable SD-SDI output with equalization and reclocking

Features

The SMX6811N(S)/SMX6812N(S) offer the following features:

- ✓ Supporting audio embedding in 525/625 video standard
- ✓ Supporting 2 pairs (4-channel) AES audio embedding
- ✓ Supporting 20-bit and 24-bit audio embedding
- ✓ Both embedded audio group and embedded code selectable
- ✓ Supporting AES output
- ✓ Audio tracking（only applicable to SMX6811NS & SMX6812NS）
- ✓ Embedded SDI output with reclocking
- ✓ One analog composite video output monitoring
- ✓ SD-SDI video input auto detection and input status feedback
- ✓ Supporting 4-channel audio metering display
- ✓ Embedding tone signal at fixed frequency rate
- ✓ Supporting maximum 1.3 second audio delay
- ✓ Supporting audio gain adjustment, invert and mute
- ✓ Input EDH monitoring
- ✓ Re-insert EDH
- ✓ Freeze frame, black field and video loss detection
- ✓ Audio loss and audio overload detection

FCC Caution:

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with part 15 of the FCC Rules.
Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

Reorient or relocate the receiving antenna.
Increase the separation between the equipment and receiver.
Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
Consult the dealer or an experienced radio/TV technician for help.

Module Descriptions

The Front Part of Module

Figure 1-1 shows the board of SMX6811N(S)/SMX6812N(S)

Fig. 1-1 The board of SMX6811N(S)/SMX6812N(S)

Back Connector

SMX6811N(S)/SMX6812N(S)

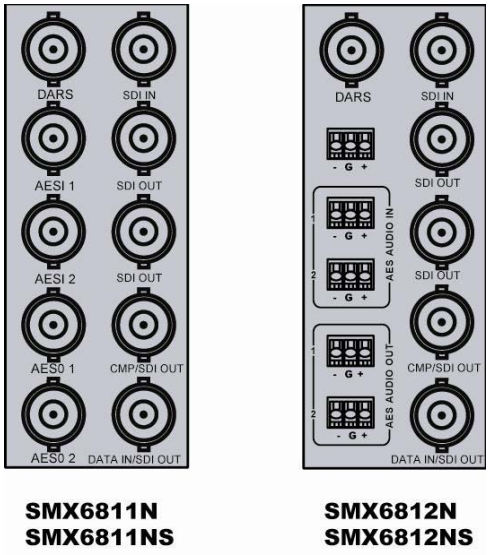


Fig.1-2 Back Connector of SMX6811N(S)/SMX6812N(S)

Tab. 1-2 Description of SMX6811N(S)/SMX6812N(S) Back Connector

Item	Description
DARS IN	DARS input. • For the SMX6811N（S）, only one unbalanced DARS input is available. • For the SMX6812N（S）, one unbalanced DARS

Item	Description
	input and one balanced DARS input are available. When you use the DARS as the audio output reference, firstly, please confirm which you will choose between the balanced input mode and unbalanced input mode. Then set the jumper correctly (For the details, please see the **Tab. 2-3**). Finally, you should provide the standard AES/EBU digital audio signal with 48kHz as the reference signal. When you do not use the DARS as the audio output reference, the port is not available.
AESI 1，AESI 2AES AUDIO IN	AES digital audio input
AESO 1，AESO 2AES AUDIO OUT	AES digital audio output
SDI IN	SD-SDI input
SDI OUT	Re-clocked SDI output
CMP/SDI OUT	CMP/SDI OUT. It can be selected by the jumper JP4 from the SDI output to the analog composite video output. The SDI outputs with reclocking. The analog composite signal outputs with the OSD menu and the audio meter. (For the details, please see the **Tab. 2-3**) The default setting is the analog composite signal.
Item	**Description**
DATA IN / SDI OUT	• For SMX6811N and SMX6812N, it is only used for SDI output. • For SMX6811NS and SMX6812NS, it can be set between DATA IN input and SDI output, by the jumper JP5. DATA IN is the audio tracking signal. The default factory value is DATA IN.

Signal Flow

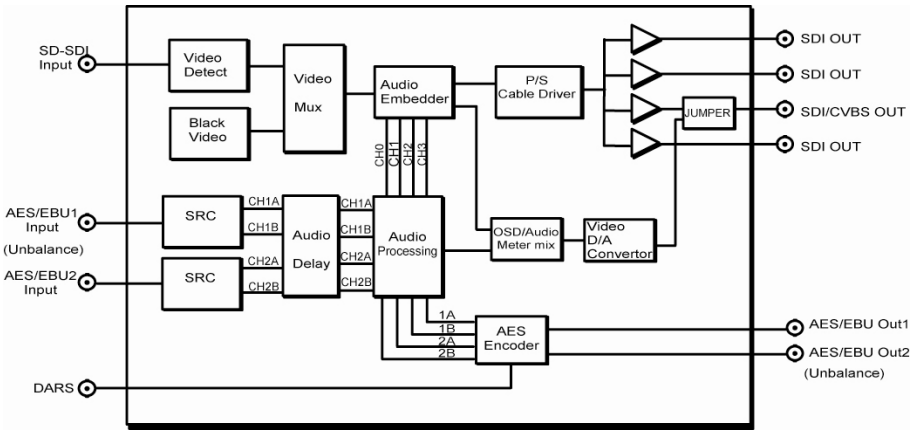


Fig.1-4 Signal Flow of SMX6811N

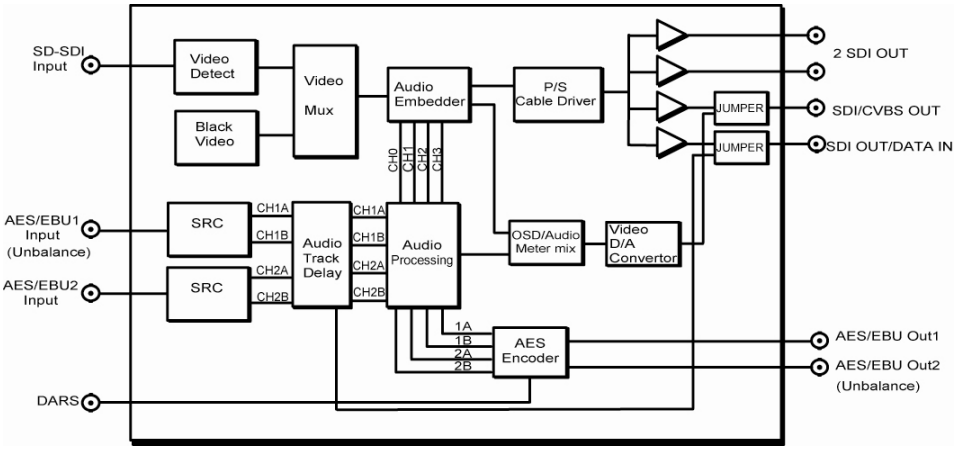


Fig.1-5 Signal Flow of SMX6811NS

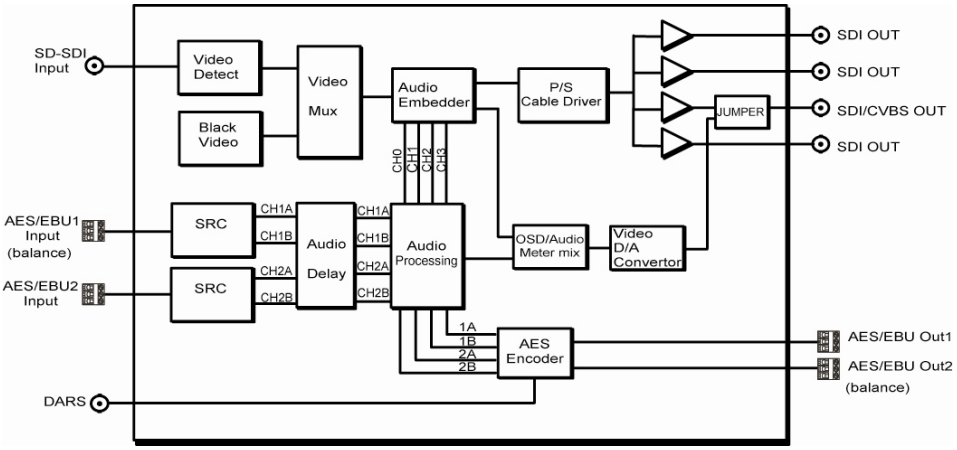


Fig.1-6 Signal Flow of SMX6812N

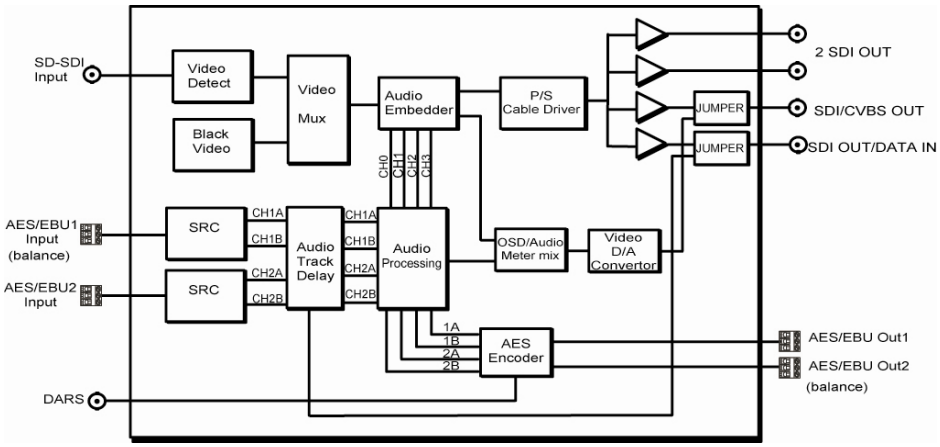


Fig.1-7 Signal Flow of SMX6812NS

Chapter 2 Installation

Overview

The power consumption for module and the maximum power ratings that frame can sustain have to be confirmed before installing the module.

In this chapter, the following topics on installation process for SMX6811N(S)/SMX6812N(S) are discussed below:

- Unpacking the module
- Setting Jumper
- Installing the module
- Making the connections
- Removing the module

Maximum Power Ratings for Frame

The maximum power ratings that different types of frames can sustain are listed in the Table 2-1

Tab. 2-1 Maximum Power Consumption

Frame	Maximum Voltage	Redundant Power Supplies	Numbers of Slots
6800N-1U	40W	Yes	4
6800N-2U	60W	Yes	10

Unpacking the Module

Preparing the Product for Installation

Contact your dealer right now if any items are missing.

Follow the procedures below before installing the module:

- Check the equipment for any invisible damage that may have occurred during transit.
- Confirm all the items listed on the packing list have been received.
- Remove all the packing material including electrostatic-resistant packing.
- Retain these packing for future use.

Check the Packing List

Tab. 2-2 Packed Components

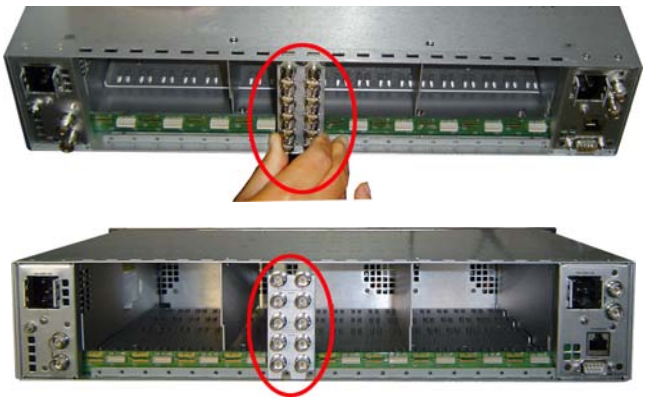
Model Name	Description
SMX6811N(S)/SMX6812N(S)	SMX6811N(S)/SMX6812N(S) module (1pc); back connector (1pc), and other accessories

Installing the Module

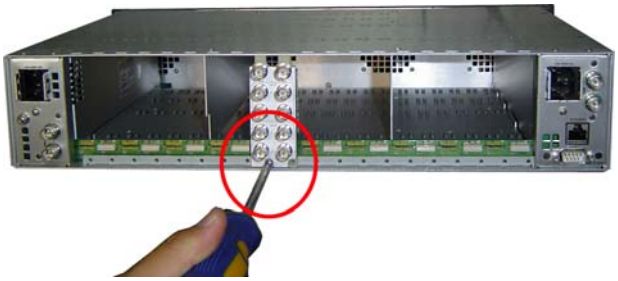
Caution：Static electricity may cause sensitive semiconductor out of order. Avoid installing or removing the module in the electrostatic-induced environment.

Follow the following steps to install the module:

Step 1



Step2



Step3

Step 4

Step5

Fig. 2-1 Installation of 2U Frame of 6800 Series

- ✓ Locate the position for back connector and insert the back connector
- ✓ Fasten the screw to fix the back connector.
- ✓ Locate the slot for module.
- ✓ Get the module installed in the slot, push the module slightly along the slot, press module again to confirm that the module is installed firmly and then close swivel handle.
- ✓ Install the front panel.

Install the front panel. Making the Connections

Please connect signals based on Fig. 1-2.

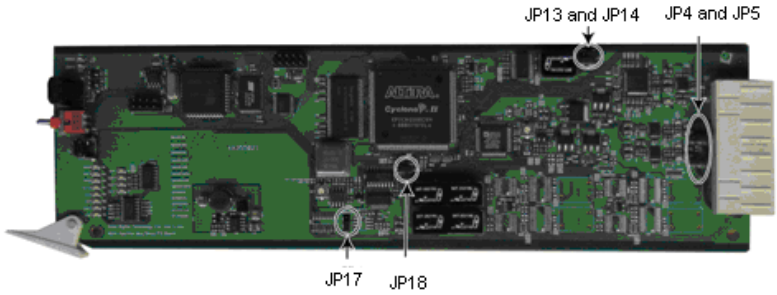
Removing the Module

Follow the following steps to remove SMX6811N(S)/SMX6812N(S) module:

1. Open the front part of frame.
2. Open the swivel handle to the full.

3. First make sure the frame stands firmly, and then pull the module gently along the slot till out of frame.
4. Install the front panel.

Setting Jumper



Tab. 2-3 Description of SMX6811N(S)/SMX6812N(S) Jumpers

Item	Description
JP4	SDI_03/CMP_03. It is adjustable. The default setting is CMP_03. It can be selected from the SDI output to the analog composite video output. • When it is set to SDI_03, the SDI outputs with reclocking. When it is set to CMP_03, the analog composite signal outputs with the OSD menu and the audio meter.
JP5	SDI_04/CMP_04.

Item	Description
	• For SMX6811N and SMX6812N, it is only used for SDI output. • For SMX6811NS and SMX6812NS, it is a selectable jumper and can be set between DATA IN input and SDI output. DATA IN is the audio tracking signal. The default setting is “CMP_04”. 1. When it is set to “SDI_04”, the back connector port of “SDI OUT/DATA IN” outputs the SDI with reclocking and embedded audio. 2. When it is set to “CMP_04”, the back connector port of “SDI OUT/DATA IN” is used for DATA IN.
JP13，JP14	• For SMX6811N and SMX6812N, it is only set to UNBAL. • For SMX6811NS and SMX6812NS, it is a selectable jumper and can be set between BAL and UNBAL. The default setting is “BAL”. 1. When it is set to “BAL”, it uses the balanced DARS signal as the reference signal of AES audio output. The user must select the balanced input connector as the DARS input. 2. When it is set to “UNBAL”, it uses the unbalanced DARS signal as the reference signal of AES audio output. The user must select the unbalanced input connector as the DARS input.
Item	**Description**
JP17	DATA IN TERMINATION ON/OFF. It is used for the termination of the DATA IN signal and only used for SMX6811NS and SMX6812NS Module. When many modules share one DATA signal, just jumper to ON to enable the 75Ω input termination. The default setting is ON. • ON: 75Ω input termination is available. • OFF: 75Ω input termination is unavailable.
JP18 （select the control mode）	(LOC/RMT)/LOCAL. It is adjustable. The default setting is LOC/RMT. • When the “LOC/RMT” is selected, the module is controlled not only by a variety of switches on the local module card, but also by the remote control network. • When the “LOCAL” is selected, the module is controlled only by the switches on the local module card.

LED Indicator

Table 2-4 LED Indicator Function

Item	Description
POWER (green)	**On**: Power is supplied.
CONFIG (orange)	**On**: The device is Initializing.
BS0/BS1 (orange)	**On:** select BANK. The combination of the two LED lights indicates the present state of Bank. It indicates the Bank number in binary mode. For the details, please see the Tab.2-5.
AUTO（green）	**On**: Input Video standard is set to AUTO, and it can be auto detected.

Item	Description
525（green）	• **On**: the input video format is 525 and conforms to the input video format what you have set. • **Flickering**: the input doesn't conform to the input video format 525 what you have set. • **Off**: no 525 signal input.
625（green）	• **On**: the input video format is 625 and conforms to the video format what you have set. • **Flickering**: the input doesn't conform to the input video format 625 what you have set. • **Off**: no 625 signal input.
DARS（green）	• On: the output digital audio synchronizes with the DARS, and the input DARS is correct. • Flickering: the output digital audio synchronizes with the DARS, but the input DARS is incorrect. • Off: the output digital audio does not synchronize with the DARS.
EBD（green）	• On: the embedded audio is right. • Flickering: there is wrong information about embedded audio. • Off: no embedded audio information.
Item	**Description**
AUD1（green）	• On: In SDI output, there is right information about embedded audio channel 1A. • Flickering: In SDI output, there is wrong information about embedded audio channel 1A. • Off: In SDI output, there is no information about embedded audio channel 1A.
AUD2 (green）	• On: In SDI output, there is right information about embedded audio channel 1B. • Flickering: In SDI output, there is wrong information about embedded audio channel 1B. • Off: In SDI output, there is no information about embedded audio channel 1B.
AUD3（green）	• On: In SDI output, there is right information about embedded audio channel 2A. • Flickering: In SDI output, there is wrong information about embedded audio channel 2A. • Off: In SDI output, there is no information about embedded audio channel 2A.
AUD4（green）	• On: In SDI output, there is right information about embedded audio channel 2B. • Flickering: In SDI output, there is wrong information about embedded audio channel 2B. • Off: In SDI output, there is no information about embedded audio channel 2B.

Tab. 2-5 Description of DBS Indicator

BS0	BS1	Bank Number
off	off	Bank 0
on	off	Bank 1
off	on	Bank 2
on	on	Bank 3

Chapter 3 Operation and Control

Switches and Key

Refer to **Figure 3-1** or **Table 3-1**（BANK 0）or **Table 3-2**（BANK 1）or **Table 3-3**（BANK 2）or **Table 3-4**（BANK 3）to complete control

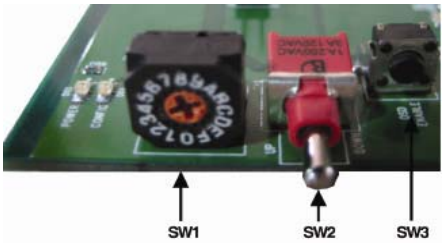


Fig. 3-1 Switches and key

Rotate SW1 at the position of 0, and select the proper BANK by SW2.

BANK Selection
The SW1 has four Banks
Rotate the SW1 at the position of "0". The position of "0" is always used to select BANK.
Turn SW2 up or down to select BANK.

1. SW1 Mode Selection

SW1 is a 16-position rotary switch, which is used to select the specific setting.
The selection range is: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, A, B, C, D, E, F.

2. SW2 Mode Selection

SW2 is a toggle switch, which is used to decide the concrete figure of the setting made by SW1.
SW2 is a 3-position toggle switch, used to decide the concrete figure of the setting made by SW1.
To keep SW2 at the position of "UP" or "DOWN", the continuous adjustment can be achieved.

3. SW3

Press the SW3 to activate OSD.
When the user does not operate the board, the OSD menu will disappear after 10 seconds.
For analog Composite output, it adds the audio meter and the OSD menu. To monitor the audio and the menu item, please connect the analog Composite output signal to one monitor which supports the analog Composite video input.

The audio meter and the OSD menu are shown as bellow.

OSD menu

Tab. 3-1 BANK 0 Function Setting

SW1	**Function**	**Options**	**Default**
0	Bank Select	Bank 0~Bank 3	Bank 0
1	Vid Std Sel: Select the input video signal standard.	525/625/AUTO	AUTO
2	Out Vid Std: Select the output video signal standard. Only for the input video signal of 525 standard. For 625 standard, this item is unavailable.	NTSC/PAL-M	NTSC
3	Audio Track: Enable the audio tracking or not.（only used for SMX6810NS module）	ON/OFF	ON
4	ANC Clean: Clean the auxiliary datum of SDI input signal or not.	ON/OFF	OFF
5	Embed Bits: Set the bits of embedded audio	20bits/24bits	24
6	Embed Mod: Set the mode of embedded audio	overwrite/Append /Auto	Auto
7	Embed En: Enable the embedded audio or not.	Enable/Disable	Enable
8	Embed Group: Select the embedded audio Group	Group 1/Group 2/ Group 3/Group 4	Group 1
9	AES1 Format: Select the format of the AES 1 input signal	PCM/non-PCM	PCM

SW1	Function	Options	Default
A	AES2 Format: Select the format of the AES 2 input signal	PCM/non-PCM	PCM
B	DARS LockMod Select "Enable" to set the DARS as the reference signal of the output AES Audio and "Disable" not to set.	Disable/Enable	Disable
C~E	Reserve		
F	Recall def: Recall the default setting.	Restore ?/Restored	

Note: For Bank 0 "6", audio embedded mode:

- *For the overwrite mode, in the video source, it must exist the audio group where can be embedded. For example, in order to embed audio Group 1, there must be the audio Group1 existing in the SDI input signal.*
- *For the Append mode, in order to embed audio Group, there must **not** be the audio Group1 existing in the video source.*
- *For the Auto mode, regardless of the existence of embedded audio Group in the video sources, all can be embedded the audio.*

Tab. 3-2 BANK 1 Function Setting

SW1	Function	Options	Default
0	Bank Select	Bank 0~Bank 3	Bank 0
1	Out Ch1A Sel: Select audio source of the embedded audio output channel 1A	In 1A/ In 1B/ In 2A/ In 2B/In 1 Sum/ In 2 Sum/Tone 1/ Tone 2/Mute	In 1A
2	Out Ch1B Sel: Select audio source of the embedded audio output channel 1B	In 1A/ In 1B/ In 2A/ In 2B/In 1 Sum/ In 2 Sum/Tone 1/ Tone 2/Mute	In 1B
3	Out Ch2A Sel: Select audio source of the embedded audio output channel 2A	In 1A/ In 1B/ In 2A/ In 2B/In 1 Sum/ In 2 Sum/Tone 1/ Tone 2/Mute	In 2A
4	Out Ch2B Sel: Select audio source of the embedded audio output channel 2B	In 1A/ In 1B/ In 2A/ In 2B/In 1 Sum/ In 2 Sum/Tone 1/ Tone 2/Mute	In 2B
5	In Ch1A Lev:	-96 to +12dB	+0.0dB

SW1	Function	Options	Default
	Adjust the levels of input audio channel 1A.	in 0.5dB step	
6	In Ch1B Lev: Adjust the levels of input audio channel 1B.	-96 to +12dB in 0.5dB step	+0.0dB
7	In Ch2A Lev: Adjust the levels of input audio channel 2A.	-96 to +12dB in 0.5dB step	+0.0dB
8	In Ch2B Lev: Adjust the levels of input audio channel 2B.	-96 to +12dB in 0.5dB step	+0.0dB
9	Ch1A Delay: Adjust the delay of input audio channel 1A.	0 to 1320ms in 1ms step	0ms
A	Ch1B Delay: Adjust the delay of input audio channel 1B.	0 to 1320ms in 1ms step	0ms
B	Ch2A Delay: Adjust the delay of input audio channel 2A.	0 to 1320ms in 1ms step	0ms
C	Ch2B Delay: Adjust the delay of input audio channel 2B.	0 to 1320ms in 1ms step	0ms
D~F	Reserve		

Tab. 3-3 BANK 2 Function Setting

SW1	Function	Options	Default
0	Bank Select	Bank 0~Bank 3	Bank 0
1	In Ch1A Inv: Adjust the embedded input audio channel 1A to invert.	On/Off	Off
2	In Ch1B Inv: Adjust the embedded input audio channel 1B to invert.	On/Off	Off
3	In Ch2A Inv: Adjust the embedded input audio channel 2A to invert.	On/Off	Off

SW1	Function	Options	Default
4	In Ch2B Inv: Adjust the embedded input audio channel 2B to invert.	On/Off	Off
5	Meter1 Type: Select the display type of audio meter1(CH1A，CH1B)	Off/VU/ PPM/VU+PPM	VU+PPM
6	Meter2 Type: Select the display type of audio meter2(CH2A，CH2B)	Off/VU/ PPM/VU+PPM	VU+PPM
7	Meter1 H Pos: Select the horizontal position of audio Meter1 (CH1A，CH1B)	1 to 168	7
8	Meter2 H Pos: Select the horizontal position of audio Meter2 (CH2A，CH2B)	6 to 174	168
9	Test Level: Select the test level of audio meter.	-18dB/-20dB	-18dB
A	Black Thd: The threshold of Black burst triggering.	1 to 255 in 1 step	30
B	Freeze Delay: The delay of Freeze detected	1 to 255 in 1 step	30
C	Freeze Thd: The threshold of Freeze triggering.	1 to 255 in 1 step	30
D	No Aud Delay: The delay of no audio detected	1 to 255 in 1 step	30
E	No Audio Thd: The threshold of no audio detected.	-72 dB, -66 dB, -60 dB, -54 dB, -48dB	-60dB
F	Reserve		

Tab. 3-4 BANK 3 Status Displaying Table

SW1	Function	Options	Default
0	Bank Select	Bank 0~Bank 3	Bank 0
1	Video Std: Display the input video standard.	525/ Auto 525 625/ Auto 625	Read only
2	In vid status: Display the input video	Loss , Black , Freeze , Normal	Read only

SW1	Function	Options	Default
	status		
3	Group Pres: Display the audio group embedded in the input video.	--------/G1------ /--G2----/G1G2---- /----G3--/G1--G3-- /--G2G3--/G1G2G3-- /------G4/G1----G4 /--G2--G4/G1G2--G4 /----G3G4/G1--G3G4 /--G2G3G4/G1G2G3G4	Read only
4	In AES: Display the status of the four input embedded audio channels	O: overload/ V: normal , /--:no audio	Read only
5	Out Aud Stu: Display the status of the four output embedded audio channels	O: overload/ V: normal , /X:no audio	Read only
6	EDH Packet: Display the status of the EDH Packet	no EDH/Detect EDH /EDH Err	Read only
7	EDH Err Num: The sum of EDH error numbers. (Clear the counter by the toggle switch up or down)	0 to 32767	
8~C	Reserve		
D	Modular mod: Display the modular mode.	SMX6811N(S) or SMX6812N(S)	Read only
E	Version info: Version information.	Display the version of hardware and software.	Read only
F	Hardware sta: Hardware status	Correct/Error	Read only

Note: *the Bank 3 is used to display the status.*

"3" Group Pres: Display the audio group embedded in the input video. For example, the"G1--G3--" indicates that there are audio Group 1and Group 3 embedded in input video.

Chapter 4 Specifications

SDI Video Input

Item	Parameter
Standards	SMPTE 259M-C, 270 Mbps，525/625 SDI Component
Impedance	75Ω termination
Return Loss	>18dB to 360MHz
Connector	BNC (IEC169-8)
Equalization	Auto to 30dB@270 Mbps

SDI Video Output

Item	Parameter
Standards	SMPTE 259M-C, 270 Mbps，525/625 SDI component
Connector	BNC (IEC169-8)
Impedance	75Ω
Return Loss	>18dB to 270MHz
Signal Level	800 mV ± 10%
DC Offset	0 V ± 0.5 V
Rise/Fall Time	400 to1500ps（20% to 80% of amplitude）
Overshoot	<10%
Jitter	<0.2 UI（740ps）Peak

Analog Video Output

Item	Parameter
Standard	NTSC, PAL or PAL-M
Level	1Vp-p +/-3dB
Impedance	75 Ω
Connector	BNC(IEC169-8)
Return loss	>40 dB to 5 MHz
DC offset	0V±0.05 V
Frequency response	±0.2 dB to 5 MHz
Differential gain	<1%
Differential phase	<1.5°
Propagation delay	+/-10ns to 5 MHZ

DATA IN

Item	Parameter
Input Impedance	75Ω/high impedance (jumper selectable)
Input Sensitivity	500mV pk to pk (minimum value)
Input Cable Length	100 meter
Return Loss	<-20dB

Unbalanced AES Input (for SMX6811N and SMX6811NS)

Item	Parameter
Connector	BNC(IEC 169-8)
Impedance	75Ω
Signal standard	AES 3：1992，AES3id：1995，SMPTE276M
Rise and Fall Time	30 to 44ns

Balanced AES Input (for SMX6812N and SMX6812NS)

Item	Parameter
Connector	3-pin (male)
Impedance	110Ω
Signal standard	AES 3：1992，AES3id：1995，SMPTE276M
Rise and Fall Time	5 to 30ns

Unbalanced AES Output (for SMX6811N and SMX6811NS)

Item	Parameter
Connector	BNC（IEC 169-8）
Output Level	1.0 V +/-10% (peak to peak)
DC offset	0.0V±50.0mV
Rise and Fall Time	30 to 44 ns (10% to 90% of amplitude)
Impedance	75 Ω
Return Loss	>25 dB, 0.1 to 6.0 MHz

Balanced AES Output (for SMX6812N and SMX6812NS)

Item	Parameter
Connector	3-pin (male)
Output Level	2.0 to 7.0 V (peak to peak)
Jitter	+/-20 ns
Rise and Fall Time	5 to 30 ns (10% to 90%)
Impedance	110 Ω +/- 20% (0.1 to 6 MHz)
CMR Ratio	>30 dB below output signal (0 to 6 MHz)

DARS Input

Item	Parameter
Connetor	3-pin (male)
Sensitivity	< 200mv
Impedance	110 Ω +/- 20% (0.1 to 6 MHz)
Maximum Input Level	10V（peak to peak）
CMR Ratio	>30 dB below output signal (0 to 6 MHz)

Unbalanced DARS Input

Item	Parameter
Connetor	BNC（IEC 169-8）
Sensitivity	< 200mv
Impedance	75 Ω
Return Loss	>35 dB, 0.1 to 6.0 MHz

Power Consumption

Power: 3.25W; Positive Rail : 500 mA; Negative Rail : 10 mA

Note: Specifications are subject to change without notice

Chapter 5 Warranty for osee product

What the warranty covers:

osee warrants its products to be free from defects in material and workmanship during the warranty period of two year from purchase date. If a product proves to be defective in material or workmanship during the warranty period, osee will, at its sole option, repair or replace the product with a similar product. The replacement unit will be covered by the balance of the time remaining on the customer's original limited warranty.

No sales personnel of the seller or any other person is authorized to make any warranties other than those described above, or to extend the duration of any warranties on behalf of osee, beyond the time period describe above.

This warranty is extended to the first consumer only, and proof of purchase is necessary to honor the warranty. If there is no proof of purchase provided with a warranty claim, osee reserves the right not to honor the warranty set forth above. Therefore, labor and parts may be charged to the consumer.

What the warranty does not cover:

1. Any product, on which the serial number has been defaced, modified or removed.
2. Damage, deterioration or malfunction resulting from:
   - Accident, misuse, neglect, fire, water, lightning, or other acts of nature, unauthorized product modification, or failure to follow instructions supplied with the product
   - Repair or attempted repair by anyone not authorized by osee
   - Any damage of the product due to shipment.
   - Removal or installation of the product.
   - Causes external to the product, such as electric power fluctuations or failure.
   - Use of supplies or parts not meeting osee product's specifications.
   - Normal wear and tear.
   - Any other cause which does not relate to a product defect.