SDX6811N/SDX6812N
Digital Audio De-embedder

USER MANUAL

OSEE TECHNOLOGY CO., LTD.

Product Information

Model: SDX6811N/SDX6812N Digital Audio De-embedder
Version: V010000
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Company

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Contents

Chapter 1 Introduction

Overview

The SDX6811N/ SDX6812N are AES audio de-embedding modules. Both modules can de-embed four channels (two pairs) audio from SD-SDI signal and support reclocked SDI output. The user can choose any channel out of four embedded audio groups as audio output, or choose the synthesized audio as output signal.

Each module has its own distinct feature as follows:

The SDX6811N has unbalanced AES output, and the SDX6812N has balanced AES output.

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

Tab. 1-1 SDX6811N/SDX6812N Digital Audio De-embedder

Module	**INPUT**	**OUTPUT**
SDX6811N	• One channel SD-SDI 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
SDX6812N	• One channel SD-SDI input • One channel balanced DARS input • 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

Features

The SDX6811N/SDX6812N offers the following features:

- ✓ De-embedding audio from SD-SDI signal; supporting 2 pairs (4 channels)of AES/EBU outputs
- ✓ De-embedding in 525/625 video standard
- ✓ SDI output with equalization and reclocking
- ✓ One channel analog composite output monitoring
- ✓ 27 available signal sources for each audio output
- ✓ SD-SDI video input auto-detect and input status feedback
- ✓ Supporting 16-bit, 20-bit and 24-bit audio processing
- ✓ Supporting 4-channel audio metering display
- ✓ Generating Tone signal at fixed frequency rate

- ✓ Supporting maximum 1.3 seconds audio delay, invert and mute
- ✓ EDH Monitoring
- ✓ Freeze frame, black field and video loss detection
- ✓ Audio loss and audio overload monitoring

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 SDX6811N/SDX6812N

Fig. 1-1 The board of SDX6811N/SDX6812N

Back Connector

SDX6811N/SDX6812N

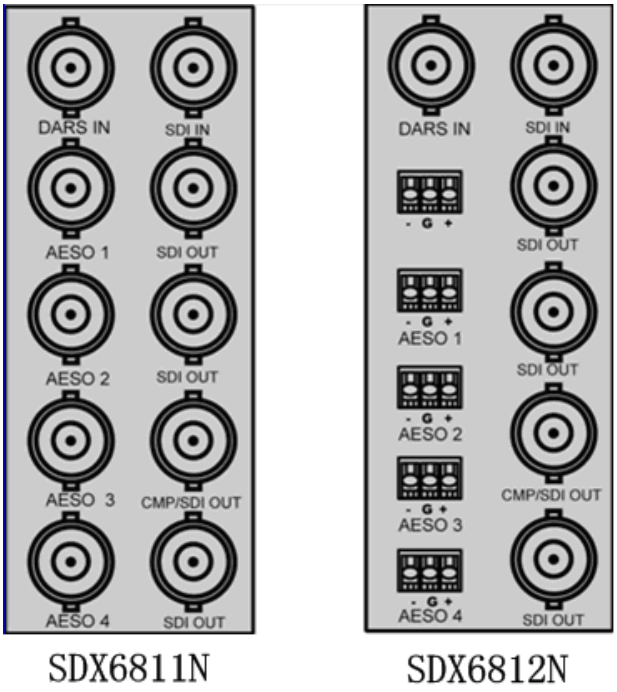


Fig.1-2 Back Connector of SDX6811N/SDX6812N

Tab. 1-2 description of SDX6811N/SDX6812N Back Connector

Item	**Description**
DARS IN	DARS input. Audio synchronization signal. • For the SDX6811N, only one unbalanced DARS input is available. • For the SDX6812N, one unbalanced DARS 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.
AESO1，AESO2 AESO3，AESO4	AES digital audio output, only the AESO1 and AESO2 are available.
SDI IN	SD-SDI Input

Item	Description
SDI OUT	SD-SDI output with reclocking.
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.

Signal Flow

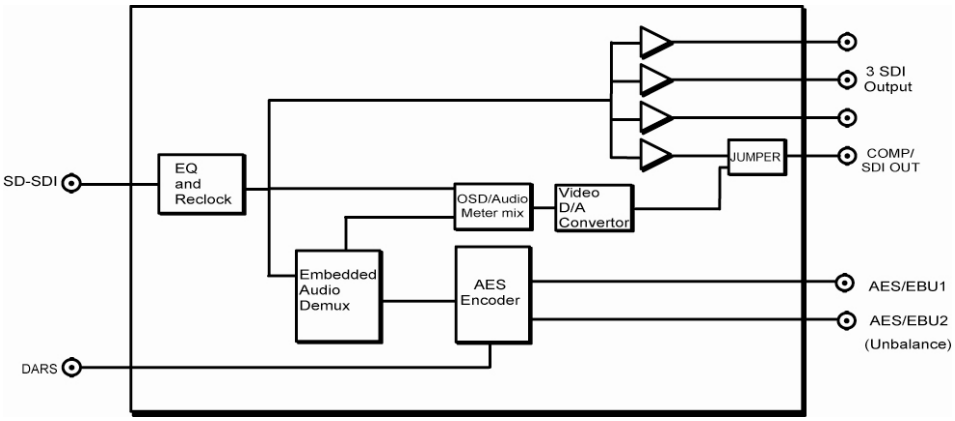


Fig. 1-3 Signal Flow of SDX6811N

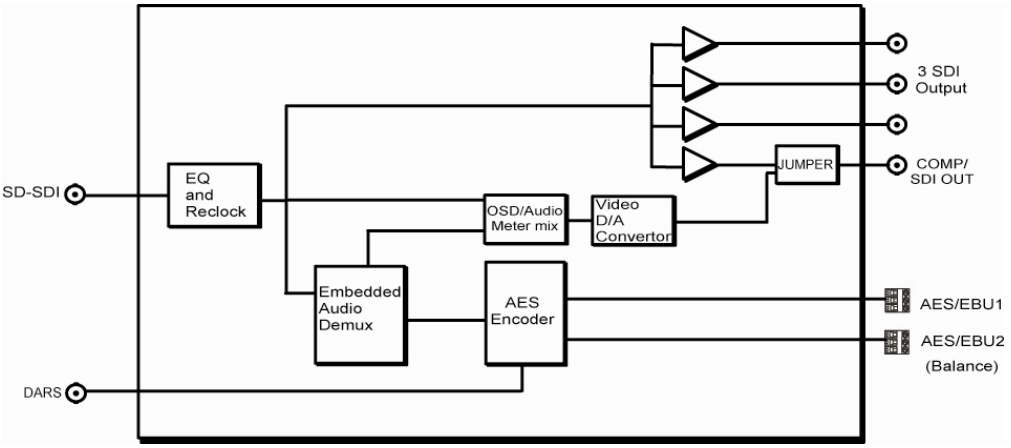


Fig. 1-4 Signal Flow of SDX6812N

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 SDX6811N/SDX6812N 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
6800 1U	40W	Yes	4
6800 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
SDX6811N/SDX6812N	SDX6811N/SDX6812N module (1pc); BNC (1pc), and other accessories

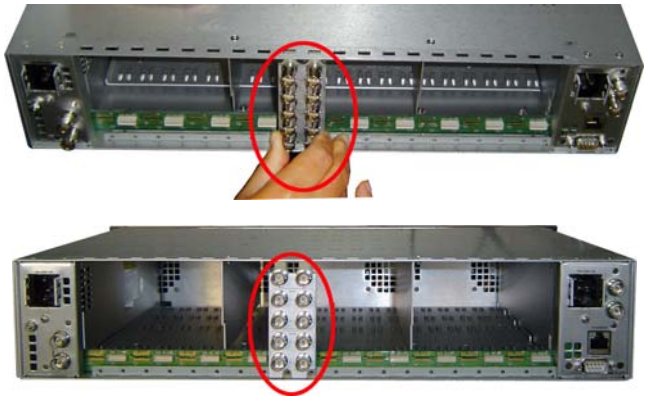
Installing the Module

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

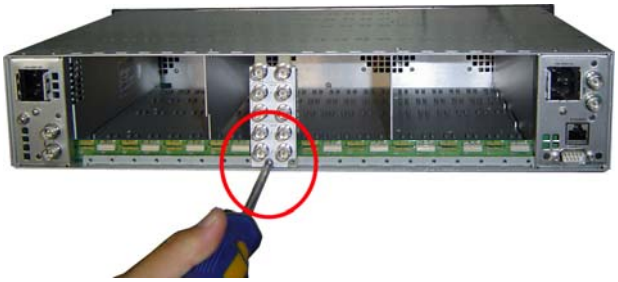
Please carefully read safety instructions particularly for the information on fire electric shock and personal injury, and strictly observe it before installing the module.

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.

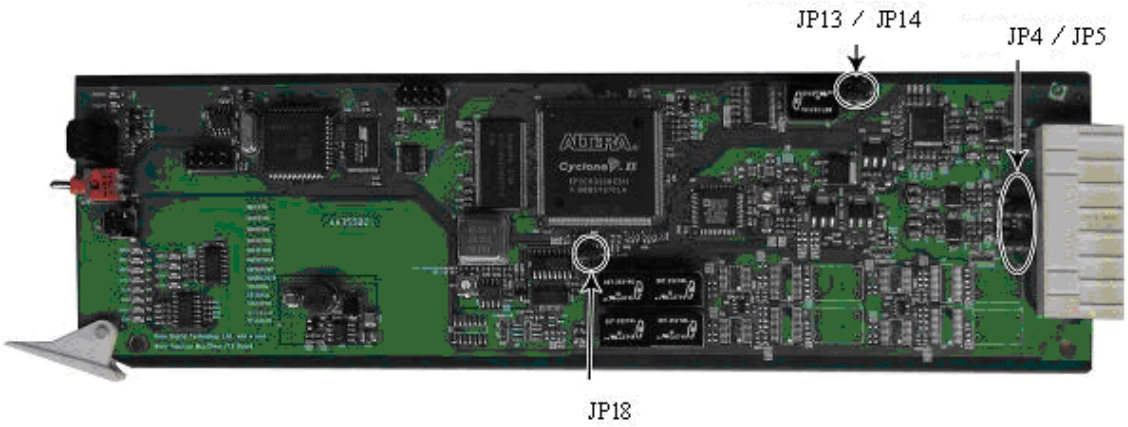
Removing the Module

Follow the following steps to remove SDX6811N/SDX6812N 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 SDX6811N/SDX6812N Jumpers

Item	Description
JP4	SDI_03/CMP_03. It is a selectable jumper. The default setting is "CMP_03". The jumper can be selected from the SDI output to the CMP output. • When it is set to "SDI_03", the port of "CMP/SDI OUT" outputs the SDI with reclocking. When it is set to "CMP_03", the port of "CMP/SDI OUT" outputs the analog composite signal with the OSD menu and the audio meter.
JP5	SDI_04/CMP_04.It is not selectable. The default setting is SDI_04

Item	Description
JP13 ， JP14	• For the SDX6811N, It is not selectable. For the default setting, both are “UNBAL”. • For the SDX6812N, It is a selectable jumper. When they are set to “BAL”, the AES output uses the balanced DARS signal as the reference signal. You must choose the balanced input port as DARS IN. When they are set to “UNBAL”, the AES output uses the unbalanced DARS signal as the reference signal. You must choose the unbalanced input port as DARS IN. For the default setting, both are “BAL”.
JP18（used to choose control mode）	(LOC/RMT)/ LOCAL. It is a selectable jumper. • 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. The default setting is LOC/RMT.

LED Indicator

Table 2-4 LED Indicator Function

Item	Description
POWER（Green）	On: Power is supplied.
CONFIG（Orange）	On: The device is Initializing.
DBS0/DBS1/ DBS2（Orange）	On: select BANK
AUTO（Green）	On: Video standard is set to AUTO, and it can be auto detected.
525（Green）	On: the input conforms to the video format what you have set. Flickering: the input doesn’t conform to the video format what you have set Off: no signal input.
625（Green）	On: the input conforms to the video format what you have set. Flickering: the input doesn’t conform to the video format what you have set. Off: no signal input.
DARS（Green）	On: DARS locked and the signal is nornal Flickering: DARS locked but the signal is wrong or DARS signal is not available Off: DARS isn’t locked
EBD（Green）	On: In SDI input, there is right information about EDH. Flickering: In SDI input, there is wrong information about EDH. Off: In SDI input, there is no information about EDH.
AUD1（Green）	On: In SDI input, there is right information about Group 1. Flickering: In SDI input, there is wrong information about Group 1. Off: In SDI input, there is no information about Group 1.
AUD2 （Green）	On: In SDI input, there is right information about Group 2.

Item	Description
	Flickering: In SDI input, there is wrong information about Group 2. Off: In SDI input, there is no information about Group 2.
AUD3（Green）	On: In SDI input, there is right information about Group 3. Flickering: In SDI input, there is wrong information about Group 3. Off: In SDI input, there is no information about Group 3.
AUD4（Green）	On: In SDI input, there is right information about Group 4. Flickering: In SDI input, there is wrong information about Group 4. Off: In SDI input, there is no information about Group 4

Table2-5 Description of DBS

DBS0	DBS1	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）to complete control

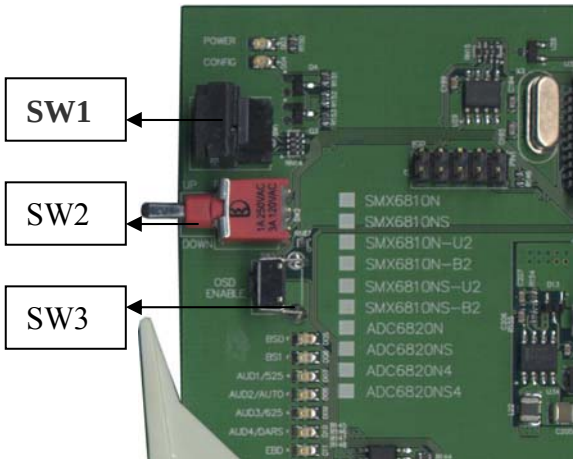


Fig. 3-1 Switches and key

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

BANK Selection
The SW1 has two 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.

Tab. 3-1 Bank 0 Function Setting

SW1	Function	Options	Default
0	Bank Select	Bank 0~Bank 3	Bank 0
1	Vid Std Sel	525/625/AUTO	AUTO
2	Out Vid Std Only for 525	NTSC/PAL-M	NTSC
3	Demux Err Ctl	Mute/Pass	Pass
4	V-bit Mute	Enable/Disable	Enable
5	AES Lock Mode	None /DARS	None
6	AES 1AB Bits	16/20/24	20
7	AES 2AB Bits	16/20/24	20
8	Meter1 Type	Off/VU/PPM/VU+PPM	VU+PPM
9	Meter2 Type	Off/VU/PPM/VU+PPM	VU+PPM
A	Meter1 H Pos	1 to 168	7
B	Meter2 H Pos	6 to 174	168
C	Test Level	-18dB/-20dB	-18dB
D~E	Reserve		
F	Recall Def	Restore ?/Restored	

Tab. 3-2 Bank 1 Function Setting

SW1	Function	Options	Default
0	Bank Select	Bank 0~Bank 3	Bank 0
1	Out Ch1A Sel (27 options in total)	CH 1, CH 2, CH 3, CH 4, CH 5, CH 6, CH 7, CH 8, CH 9, CH 10 ,CH 11, CH 12, CH 13, CH14, CH 15, CH 16, 1&2 sum, 3&4 sum,5&6 sum,7&8 sum, 9&10 sum, 11&12 sum, 13&14 sum, 15&16 sum, tone 1, tone 2, mute	CH 1
2	Out Ch1B Sel	Omitted (Refer to BANK 1:1, has the same option.)	CH 2
3	Out Ch2A Sel	Omitted (Refer to BANK 1:1, has the same option.)	CH 3
4	Out Ch2BSel	Omitted (Refer to BANK 1:1, has the same option.)	CH 4
5	Out Ch1A Lev	-96 to +12dB in 0.5dB step	+0.0dB
6	Out Ch1B Lev	-96 to +12dB in 0.5dB step	+0.0dB
7	Out Ch2A Lev	-96 to +12dB in 0.5dB step	+0.0dB
8	Out Ch2B Lev	-96 to +12dB in 0.5dB step	+0.0dB
9	Ch1A Delay	0 to 1320ms in 1ms step	0ms
A	Ch1B Delay	0 to 1320ms in 1ms step	0ms
B	Ch2A Delay	0 to 1320ms in 1ms step	0ms
C	Ch2B Delay	0 to 1320ms in 1ms step	0ms
D~F	Reserve		

Note：For “1” ~ “4” of Bank 1:

- *CH1~CH16: Four groups embedded audio, 16 channels embedded audio totally.*
- *1&2 sum ~15&16 sum: The Average of two channels in 16 channels embedded audio.*
- *Tone1，tone2:Module fixed-frequency, fixed amplitude of the audio source*
- *Mute.*

Tab. 3-3 Bank 2 Function Setting

SW1	Function	Options	Default
0	Bank Select	Bank 0~Bank 3	Bank 0

SW1	Function	Options	Default
1	Out Ch1A Inv	On/Off	Off
2	Out Ch1B Inv	On/Off	Off
3	Out Ch2A Inv	On/Off	Off
4	Out Ch2B Inv	On/Off	Off
5	Black Thd	1 to 255 in 1 step	30
6	Freeze Delay	1 to 255 in 1 step	30
7	Freeze Thd	1 to 255 in 1 step	30
8	No Aud Delay	1 to 255 in 1 step	30
9	No Audio Thd	-72 dB, -66 dB, -60 dB, -54 dB, -48dB	-60dB
A~F	Reserve		

Tab. 3-4 Bank 3 Function Setting

SW1	Function	Options	Default
0	Bank Select	Bank 0~Bank 3	Bank 0
1	Video Std	525/ Auto 525 625/ Auto 625	Read only
2	In vid status	Loss , Black , Freeze , Normal	Read only
3	IN Aud Group (The present Audio Group)	--------/G1------/--G2----/G1G2---- /----G3--/G1--G3--/--G2G3--/G1G2G3--/ ------G4/G1----G4/--G2--G4/G1G2--G4/ ----G3G4/G1--G3G4/--G2G3G4/G1G2G3G4	Read only
4	Out Aud status	O: overload; V: normal; X: no audio	Read only
5	DBN Error	V: normal ; X: error; -: disappear	Read only
6	Checksum Err	V: normal; X: error; -: disappear	Read only
7	Parity Err	V: normal; X: error; -: disappear	Read only
8	EDH Packet	no EDH / Detect EDH / EDH Err	Read only
9	EDH Err Num	0 to 32767	
A~C	Reserve		
D	Modular mod	SDX6811N Or SDX6812N	Read only
E	Version info	The version of hardware and software	Read only
F	Hardware sta	Correct/Error	Read only

Chapter 4 Specifications

In this chapter, the specifications of SDM680xN(-M4) on the following subjects are introduced:

- ✓ SDI Video Input
- ✓ SDI Video Output
- ✓ Analog Composite Video Output
- ✓ Unbalanced AES/EBU Audio output
- ✓ Balanced AES/EBU Audio output

SDI Video Input

Table 4-1 SDI Video Input Specifications

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

Table 4-2 SDI Video Output Specifications

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

Tab. 4-3 Analog Video Output Specifications

Item	**Parameter**
Standard	NTSC, PALor PAL-M
Level	1Vp-p +/-3dB
Impedance	75ohms
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

Unbalanced AES/EBU Audio Output (valid for SDX6811N)

Tab.4-4 Unbalanced AES/EBU Output Specifications

Item	**Parameter**
Connector	BNC per IEC 169-8
Level	1.0 V +/-10% (peak to peak)
DC offset	0.0V±50.0mV
Rise/fall time	30 to 44 ns (10% to 90% amplitude)
Impedance	75 ohms
Return loss	>25 dB, 0.1 to 6.0 MHz

Balanced AES/EBU Output (valid for SDX6812N)

Tab. 4-5 Balanced AES/EBU Output Specifications

Item	**Parameter**
Connector	3-pin connector (male)
Signal level	2.0 to 7.0 V (peak to peak)
Jitter	+/-20 ns
Rise and fall time	5 to 30 ns (10% to 90% ampltude)
Impedance	110 欧 +/- 20% (0.1 to 6 MHz)
CMRR	>30 dB below output signal (0 to 6 MHz)

Note: Specifications are subject to change without notice