SDX681xN-A4 Digital and Analog Audio De-embedder

USER MANUAL

osee

OSEE TECHNOLOGY CO., LTD.
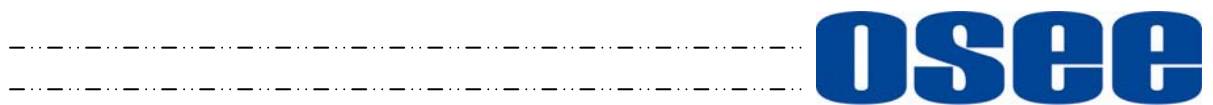
Product Information

Model: SDX6811N-A4/ SDX6812N-A4 Digital and Analog Audio De-embedder
Version: V010000
Release Date: May 30th, 2008

Company

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Contents

Chapter 1 Introduction

Overview

The two modules are SD-SDI 2 channel AES and 4-channel analog audio de-embedder with reclocked SDI output and analog composite video output for monitoring. Depending on different module version, they support either balanced or unbalanced AES audio output with four audio meter display.

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

Tab. 1-1 SDX681xN-A4 Digital and Analog Audio De-embedder

Module	Description
SDX6811N-A4	One channel SDI input, One channel SDI output, One channel SD-SDI/CVBS output, four channels analog audio output, two channels unbalanced AES/EBU audio output
SDX6812N-A4	One channel SDI input, One channel SDI output, One channel SD-SDI/CVBS output, four channels analog audio output, two channels balanced AES/EBU audio output

Features

The SDX681xN-A4 offers the following features:

✓   One channel SD-SDI video input with one channel equalizing and reclocked SDI output, digital and analog audio de-embedder

✓   One channel CVBS signal used as monitoring

✓   Supporting 525/625 standards, either auto switch or manually

✓   Supporting composite video formats: PAL-B, PAL-M, NTSC

✓   Supporting audio meter OSD

✓   One channel equalizing and reclocked SDI outputs

✓   16/20/24 bits audio processing and output

✓   Generating Tone signal at fixed rate

✓   Adjustable audio delay up to 1.3 seconds

✓   Audio processing with adjustable gain, invert and mute

✓   EDH, freeze frame and black field detection

✓   Audio loss, no audio and audio overload detection

✓   Local or remote control and 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 SDX681xN-A4

Fig. 1-1 The board of SDX681xN-A4

Back Connector

SDX681xN-A4
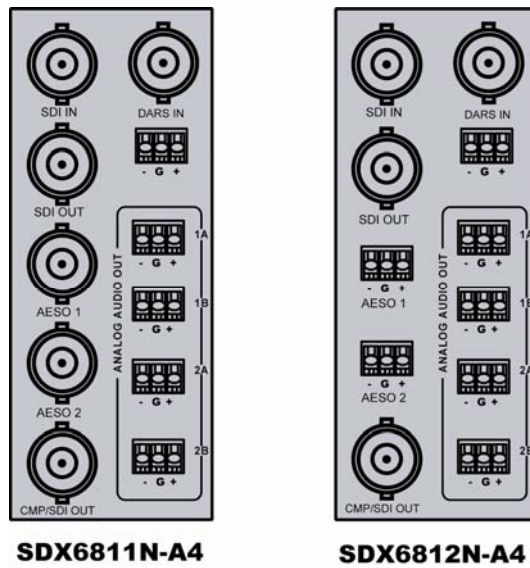
Fig.1-2 Back Connector of SDX681xN-A4

Tab. 1-2 description of SDX681xN-A4 Back Connector

Item	Description
SDI IN	SDI input
SDI OUT	Reclocked SDI output
DARS	Audio synchronization signal
1A, 1B, 2A, 2B	Analog audio out
AESO1, AESO2 (SDX6811-A4)	Unbalanced AES/EBU audio output
AESO1, AESO2 (SDX6812-A4)	Balanced AES/EBU audio output
CMP/SDI OUT	Analog Composite or SDI output (select one by setting the corresponding jumper)

Signal Flow
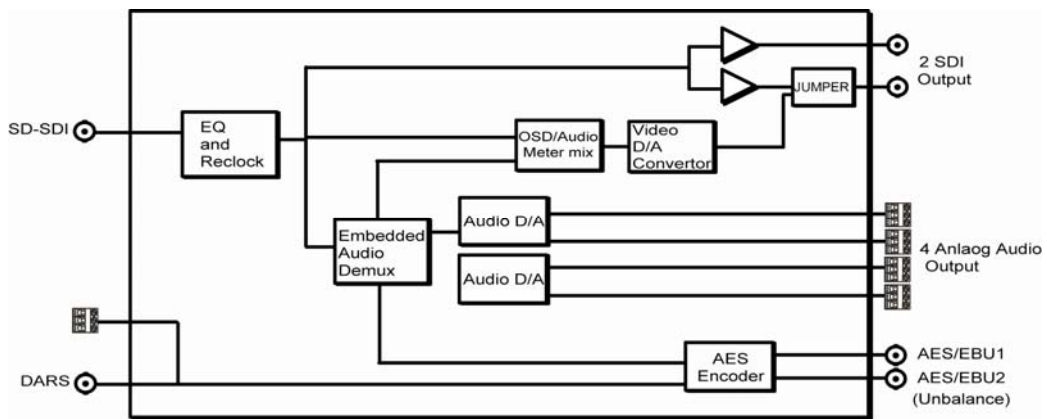
Fig. 1-3 Signal Flow of SDX6811N-A4
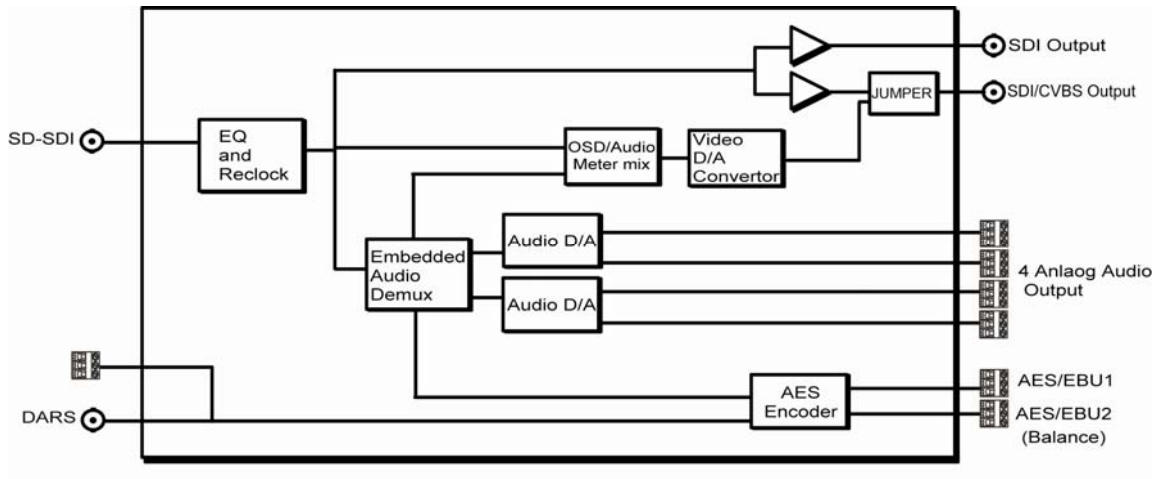
Fig. 1-4 Signal Flow of SDX6812N-A4

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 SDX681xN-A4 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. 2-3 Packed Components

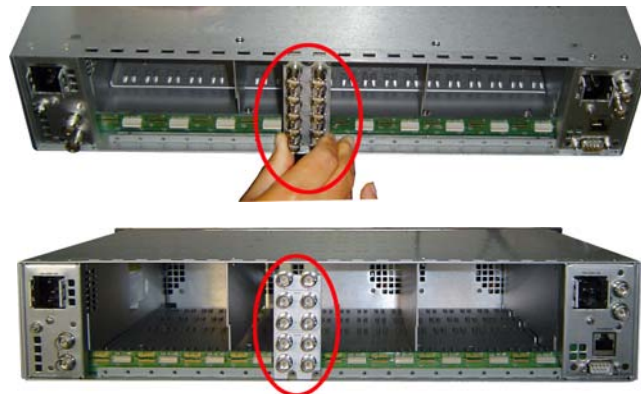| Model Name	Description
SDX681xN-A4	SDX681xN-A4 module (1pc); back connector (1pc), and other accessories

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
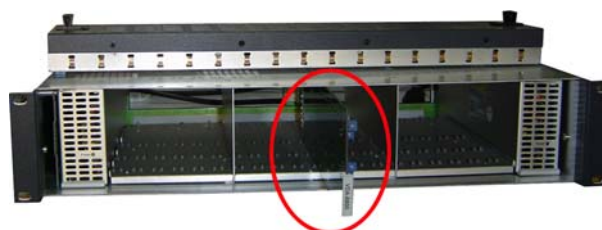
Step 4

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 SDX681xN-A4 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. 2-2 Description of SDX681xN-A4 Jumpers

Item	Description
JP1~JP12	Setting the gains of 4-channel audio output. The default setting is +24dB. +16/+18/+20/+22/+24/+26/+28dB adjustable

Item	Description
JP16	COMP/SDI, select video format. the default setting is COMP
JP19，JP20	UNBAL/BAL, the default setting is BAL, that is, the audio synchronization signal is a balanced signal.
JP18（used to choose control mode）	(LOC/RMT)/LOCAL, the default setting is LOC/RMT

LED Indicator

Table 2-4 LED Indicator Function

Item	Description
POWER	On: Power is supplied.
CONFIG	On: The device is Initializing.
BS0/BS1	On: select BANK
AUD1（Mode A）	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（Mode A）	On: In SDI input, there is right information about Group 2. Flickering: In SDI input, there is wrong information about Group 2. Off: In SDI input, there is no information about Group 2.
AUD3（Mode A）	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（Mode A）	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
EDH	On: In SDI input, there is information about EDH without error. Flickering: In SDI input, there is information about EDH with error. Off: In SDI input, there is no information about EDH.
525（Mode B）	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.
AUTO（Mode B）	On: Video standard is set to AUTO, and it can be auto detected.
625（Mode B）	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（Mode B）	On: DARS locked and the signal is normal Flickering: DARS locked but the signal is wrong or DARS signal is not available Off: DARS isn't locked
Mode	On: Mode B，Off: Mode A

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
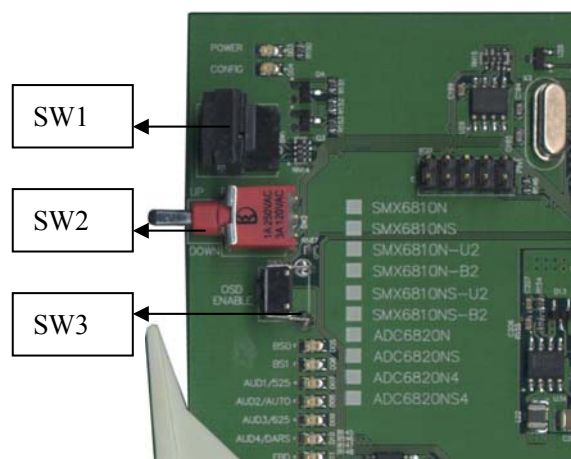
<div align="center">Fig. 3-1   Switches and key</div>

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.

<div align="center">Tab. 3-1   BANK 0 Function Setting</div>

SW1 Position	Function	OSD Text	Default
0	Select Bank	0:0 Bank Select Bank 0/1/2/3	Bank 0
1	Select Video Standard	0:1 Vid Std Sel 525/625/AUTO	AUTO

SW1 Position	Function	OSD Text	Default
2	Out Video Standard Only for 525	0:2 Out Vid Std NTSC/PAL-M	NTSC
3	Demux Error Control	0:3 Demux Err Ctl Mute/Pass	Mute
4	V-bit Mute	0:4 V-bit Mute Enable/Disable	Enable
5	AES Lock Mode	0:5 AES Lock Mode None /DARS	None
6	AES Bits ch1A&1B	0:6 AES 1AB Bits 16/20/24	20
7	AES Bits ch2A&2B	0:7 AES 2AB Bits 16/20/24	20
8	Audio Meter 1 Type	0:8 Meter1 Type Off/VU/PPM/VU+PPM	VU+PPM
9	Audio Meter 2 Type	0:9 Meter2 Type Off/VU/PPM/VU+PPM	VU+PPM
A	Meter 1 Horizontal Position	0:A Meter1 H Pos 1 to 168	7
B	Meter 2 Horizontal Position	0:B Meter2 H Pos 6 to 174	168
C	Test Level	0:C Test Level -18dB/-20dB	-18dB
D	Card Edge LED Display Mode	0:D LED Mod Mode A/Mode B	Mode A
E	Reserved	0:E Reserve	
F	Factory Settings	0:F Recall Def Restore ?/Restored	

Tab. 3-2　BANK 1 Function Setting

SW1 Position	Function	OSD Text	Default
0	Select Bank	1:0 Bank Select Bank 0/1/2/3	Bank 0
1	Out Ch 1A Selection (27 options in total)	1:1 Out Ch1A Sel 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, CH 14, CH 15, CH 16, 1&2 sum, 3&4 sum, 5&6 sum, 7&8 sum, 9&10 sum, 11&12 sum,	CH1

SW1 Position	Function	OSD Text	Default
		13&14 sum, 15&16 sum, tone 1, tone 2, mute	
2	Out Ch 1B Selection (27 options in total)	1:2 Out Ch1B Sel Omitted (Refer to BANK 1:1, has the same option.)	CH2
3	Out Ch 2A Selection (27 options in total)	1:3 Out Ch2A Sel Omitted (Refer to BANK 1:1, has the same option.)	CH3
4	Out Ch 2B Selection (27 options in total)	1:4 Out Ch2B Sel Omitted (Refer to BANK 1:1, has the same option.)	CH4
5	Out Ch 1A Level	1:5 Out Ch1A Lev -96 to +12dB in 0.5dB step	+0.0dB
6	Out Ch 1B Level	1:6 Out Ch1B Lev -96 to +12dB in 0.5dB step	+0.0dB
7	Out Ch 2A Level	1:7 Out Ch2A Lev -96 to +12dB in 0.5dB step	+0.0dB
8	Out Ch 2B Level	1:8 Out Ch 2B Lev -96 to +12dB in 0.5dB step	+0.0dB
9	Out Ch 1A Delay	1:9 Ch1A Delay 0 to 1320ms in 1ms step	0ms
A	Out Ch 1B Delay	1:A Ch1B Delay 0 to 1320ms in 1ms step	0ms
B	Out Ch 2A Delay	1:B Ch2A Delay 0 to 1320ms in 1ms step	0ms
C	Out Ch 2B Delay	1:C Ch2B Delay 0 to 1320ms in 1ms step	0ms
D~F	Reserve		

Tab. 3-3   BANK 2 Function Setting

SW1 Position	Function	OSD Text	Default
0	Select Bank	2:0 Bank Select Bank 0/1/2/3	Bank 0
1	Out Ch 1A Inverter	2:1 Out Ch1A Inv On/Off	Off
2	Out Ch 1B Inverter	2:2 Out Ch1B Inv On/Off	Off
3	Out Ch 2A Inverter	2:3 Out Ch2A Inv On/Off	Off
4	Out Ch 2B Inverter	2:4 Out Ch2B Inv On/Off	Off
5	Black Threshold	2:5 Black Thd 1 to 255 in 1 step	30
6	Freeze Delay	2:6 Freeze Delay 1 to 255 in 1 step	30
7	Freeze Threshold	2:7 Freeze Thd 1 to 255 in 1 step	30
8	No Audio Delay	2:8 No Aud Delay 1 to 255 in 1 step	30
9	No Audio Threshold	2:9 No Aud Thd -72 dB, -66 dB, -60 dB, -54 dB, -48dB	-60dB
A~F	Reserve		

Tab. 3-3   BANK 3 Function Setting

SW1 Position	Function	OSD Text	Default
0	Select Bank	3:0 Bank Select Bank 0/1/2/3	Bank 0
1	In Video Standard	3:1 Video Std Auto/625/525	Read only
2	In video status	3:2 In video status Loss , Black , Freeze , Normal	Read only
3	In audio group	3:3 In aud group --------/G1------/--G2---- /G1G2----/----G3--/G1--G3-- /--G2G3--/G1G2G3-- /------G4/G1----G4/--G2--G4 /G1G2--G4/----G3G4 /G1--G3G4/--G2G3G4 /G1G2G3G4	Read only

SW1 Position	Function	OSD Text	Default
4	Out audio status	3:4 Out Aud status O: overload,V: normal , X:no audio	Read only
5	DBN status	3:5 DBN Err V: normal, X: error, -: disappear	Read only
6	Checksum status	3:6 Checksum Err V: normal, X: error, -: disappear	Read only
7	Parity status	3:7 Parity Err V: normal, X: error, -: disappear	Read only
8	EDH Status	3:8 EDH Packet no EDH, Detect EDH, EDH Err	Read only
9	EDH Error counter (take SW2 up or down to reset the counter)	3:9 EDH Err Num 0 to 32767	Read only
A~C	Reserve		
D	Modular mode	3:D Modular Mod SMX6811N-A4 Or SMX6812N-A4	Read only
E	Version information	3:E Version Info HW1.0 FW1.0	Read only
F	Hardware status	3:F Hardwrar 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
- ✓ Analog Audio Output

SDI Video Input

<p align="center">Table 4-1 SDI Video Input Specifications</p>

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

<p align="center">Table 4-2 SDI Video Output Specifications</p>

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

<p align="center">Tab. 4-3 Analog Video Output Specifications</p>

Item	Parameter
Standard	NTSC, PAL or PAL-M
Level	1Vp-p +/-3dB
Impedance	75 Ω
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-A4)

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	75Ω
Return loss	>25 dB, 0.1 to 6.0 MHz

Balanced AES/EBU Output(valid for SDX6812N-A4)

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% amplitude)
Impedance	110 欧 +/- 20% (0.1 to 6 MHz)
CMRR	>30 dB below output signal (0 to 6 MHz)

Analog Audio Output

Tab. 4-6 Analog Audio Output Specifications

Item	Parameter
Standard	Electronic, balanced
connector	3-pin connector (male)
Level range	+16 dBu to +28 dBu
Maximum level	0 dBFS = +28 dBu
Impedance	66Ω
THD+N	<-85 dB@ 1 kHz, -1 dBFS = +23 dBu
Cross talk	<-95 dB, 20 Hz to 20 kHz, typical
SNR	>100 dB @ 0dBFS

Note: Specifications are subject to change without notice

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.