DEC/DES6800 CVBS/SDI Converter

USER MANUAL

osee

Product Information

Model:　　　　DEC/DES6800 CVBS/SDI Converter
Version:　　　V010000
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Company

OSEE TECHNOLOGY CO., LTD.

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DEC/DES6800 CVBS/SDI Converter

Chapter 1   Introduction

Overview

In this chapter the following modules are introduced：

DEC6800N：Supporting one composite loop output, two SDI output and two SDI outputs with OSD.

DES6800N：Supporting one composite loop output, one REF loop input, one REF loop output, two SDI output and two SDI outputs with OSD.

The above modules can be installed in the 6800N Series frame.

General Description of Modules

The DEC/DES6800N is a compact 12-bit decoder and can convert NTSC, PAL and composite signal into 4:2:2 SDI component signal with broadcasting quality.

The module can handle the signal like the satellite feed and microwave which contains a plenty of noise. The DES6800 has a built-in synchronizer.

The DEC/DES6800N is controlled by switch on the front panel. The table1-1 gives a general description of modules.

Table 1-1 DEC/DES6800N

Module	Description
DEC6800N	Has one composite loop output, two SDI outputs, and two SDI outputs with OSD
DES6800N	Has one composite loop output, one REF loop input, one REF loop output, two SDI outputs and two SDI outputs with OSD.

Features

The DEC/DES6800 has the following features:

- 4 oversampling 12-bit A/D converter
- Auto-detection on NTSC/PAL for input
- AGC/ACC
- Full functional processing amplifier
- Progressive VBI processing
- Built-in test pattern generator (color bar and black burst)
- EDH insertion
- OSD can be overlaid to the output
- NTSC/PAL reference input
- Built-in synchronizer

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.

Introduction to Module

The Front Part of Module

Figure 1-1 DEC/DES6800N

Note: Table 1-1 Introduction to the switch and status LED indicator. Refer to Chapter Three for detailed instructions on switch and status LED indicator.

Figure 1-2 Switch and Status LED Indicator on the Front Part of DEC/DES6800

Table 1-2：Status Indicator and Its Function

LED	Indication	Condition
CONFIG (yellow)	Off	Module is in normal operating mode.
	On	Module is initializing or initialized error.
POWER (green)	Off	No power to module
	On	Normal operation, module is powered.
ERROR (red)	Off	Normal operation.
	On continuously	No signal present on input.
	Flashing	No reference or input signal line rate does not match the reference.
WARNING(red)		Off when module runs in disorder
BANK MARK (yellow) Bank 0	Off	On/Off combination indicates which bank is selected (described in Table 3)
	On	
BANK MARK1 (yellow) Bank1	Off	
	On	
625(green)	On continuously	Valid 625 video input is present.
	Off	Standard 625 is not selected or under auto-detection, no valid 625 standard is detected.
	Flashing	Standard 625 is detected and no valid 625 video input is present.
AUTO(green)	On	Auto standard is selected
	Off	Auto standard is not selected
525(green)	On continuously	Valid 525 video input is present.
	Off	Standard 525 is not selected or under auto-detection, no valid 525 standard is detected.
	Flashing	Standard 525 is selected and no valid 525 video input is present.
GENLOCK(yellow)	Off	Reference genlock mode is not selected
	On	Reference genlock mode is selected

LED	Indication	Condition
FREEZE (green)	Off	Freeze is disabled
	On	Freeze is enabled
TSG(yellow)	Off	TSG output is disabled
	On	TSG output is enabled

Back Connector

Figure 1-3 6800N-U2 frame Back Connector

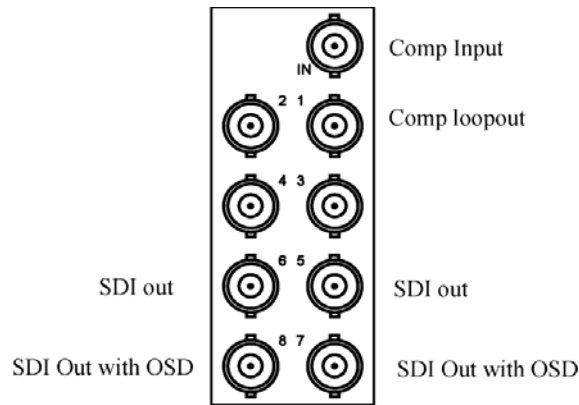## Back Connector for DEC/DES6800N

Figure 1-4 Back Connector for DEC6800N
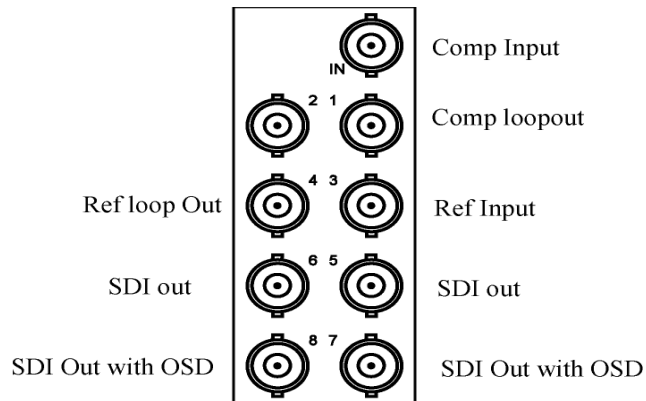
Figure 1-5: Back Connector for DES6800N

Table 1-3 Back Connector for DEC6800N

Location	Description
IN	Composite loop input
1	Composite loop output(the JP1 of DEC/DES6800N has to be set on the location "off" when it is in loop through).)
2	SDI output
3	SDI output

Location	Description
4	SDI output with OSD
5	SDI output with OSD

Table 1-4 Back Connector for DES6800N

Location	Description
IN	Composite loop input
1	Composite loop output (the JP1 of DEC/DES6800N has to be set on the location "off" when it is in loop through).)
2	Audio tracking data output: not function
3	REF loop input
4	REF loop output
5	SDI output
6	SDI output
7	SDI output with OSD
8	SDI output with OSD

Signal Flow Chart
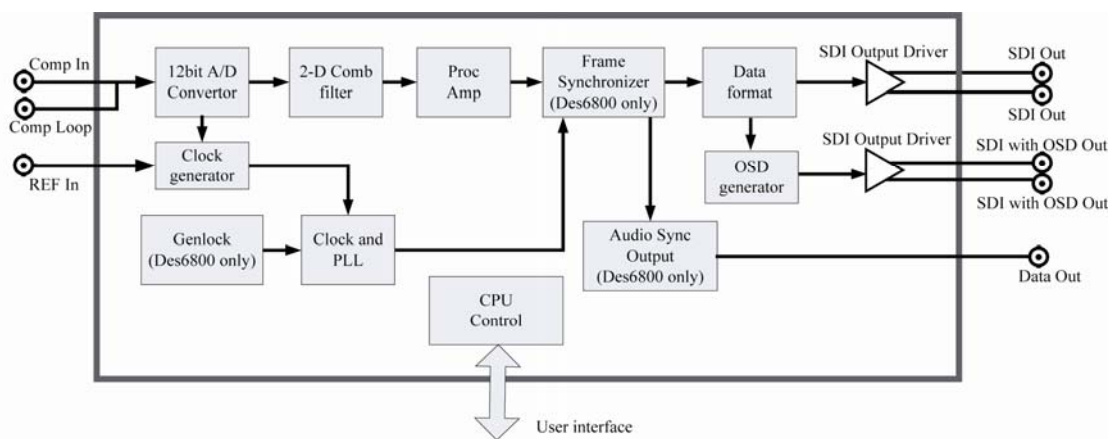

Figure 1-6 Signal Flow for DEC/DES6800N

Chapter 2　Installation

Overview

The power dissipation of module and the maximum power dissipation that frame can sustain have to be confirmed before module's installation.

The following topics on installation process of DEC/DES6800N will be introduced in this chapter below:

- Unpacking Module
- Setting Jumper
- Module Installation

- Signal Connection
- Module Removal

Maximum Power Dissipation for Frame

The maximum voltage that 6800N series frame can sustain.

Table 2-1   Maximum voltage that 6800N Series frame that can sustain

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

Unpacking the Module

Preparation for Installation

Contact your dealer right away once any item is missing.

Follow the following steps before module's installation:

- Check the equipment if any visible damage found during the transit.
- Confirm that your have received all the items listed on the packing list.
- Remove all the packing material as well as electrostatic-resistant packing if available for the equipment
- Keep these packing for future use.

Check Packing List

Table 2-2 Packed Components

Model	Description
DEC6800N	DEC6800 module (1pc); back connector (1pc), and other accessories
DES6800N	DES6800 module (1pc); back connector (1pc), and other accessories

Module Installation

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

Follow the next steps to install the module:

Step 1
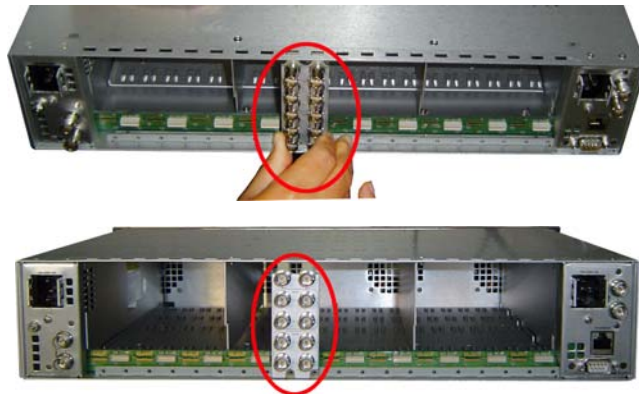
Step2

Step3

Step 4

Step5

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

Signal Connections

All signal connections shall be made through the general bus of 6800N Series frame

Module Removal

Follow the following steps to remove VDA6800N module:

1. Open the front panel
2. Open the swivel handle to the full.

3. First make sure that the frame stands firmly, and then pull gently the module along the slot out of frame.

4. Install the front panel.

Chapter 3   Operation and Control

In the chapter 3, the following topics on DES6800N are introduced:

- User's Control
- Setting the Parameters
- Setting the Jumper

User Control and Operating Instruction

Refer the Table for BANK to fulfill the function.
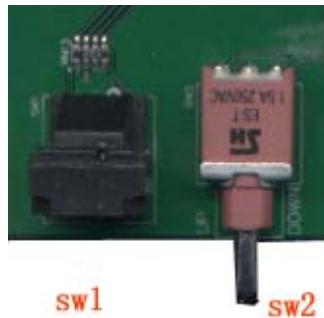
Figure 3-1   SW1 SW2 Location

Select the SW1 at the location"0", and SW2 is used to select the BANK.

BANK Selection

SW1 has four BANK.

Set SW1 to the location 0, and location "0" is always used to select BANK.

Switch SW2 up or down to select BANK A.

Table3-1 BANK Select

BANK 0	BANK 1	BANK selected
Off	Off	0
Off	On	1
On	Off	2
On	On	3

The function of SW1 is set as default, refer to Table 3-1 for defaults:

1. SW1 Mode Selection

The switch of SW1 is a 16-position rotary switch and it is used to select the specific function.

The range for selection is: 0, 1, 2, 3. 4, 5, 6, 7, 8, 9, A, B, C, D, E, F.

2. SW2 Mode Selection

The Toggle Switch of SW2

The SW2 is a toggle switch that has 3 positions with auto returning back the middle position. And it is

used to adjust the function that is set by SW1.

Set the SW2 at the position of UP or DOWN to allow the continuous adjustment.

All the parameters that can be configured on the DEC/DES6800N are as follows:

Table3-2 Functional Parameters of Bank 0

SW1 Position	Function Description	OSD Text	Default
0	Select bank	0:0 Bank Selection	Bank 0
1	Turn OSD on or off	0:1 Video: Status (Loss/625/525) Ref: Status (Loss/Ref525/Ref625/Input)	OSD Disable
2	Select video standard	0:2 Vid Standard Auto/625/525	Auto
3	Analog video input gain	0:3 In Vid Gain 80.96%~200% for 625 84.93%~200% for 525	100%
4	Chroma gain	0:4 In Chm Gain 50%~200%	100%
5	Turn AGC on or off	0:5 AGC On/Off	On
6	Turn ACC on or off	0:6 ACC On/Off	On
7	Adjust luma gain	0:7 Luma Gain 50%~200%	100%
8	Adjust black level	0:8 Black Level 7.9~-7.9IRE	0 IRE
9	Adjust chroma gain	0:9 Chroma Gain 50%~200%	100%
A	Adjust hue	0:A Hue 90~-90 (only for NTSC)	0
B	Select decoding mode	0:B Decode Mode Comb/Notch	Comb
C		0:C Reserve	
D	Enable or disable black clip	0:D Black Clip Enable/Disable	Disable
E		0:E Reserve	
F		0:F Recall Def	

Table3-3 Functional Parameters of Bank 1   (525 line rate)

SW1 Position	Function Description	OSD Text	Default
0	Select bank	1:0 Bank Selection	Bank 0

SW1 Position	Function Description	OSD Text	Default
1	Selects the genlock Mode	1:1 Genlcok Mode Free Run/Ref/Input (only for DES6800)	Ref
2	Adjust horizontal timing	1:2 H Phase 0~1715 (only for DES6800)	0
3	Adjust vertical timing	1:3 V Phase 0~524 (only for DES6800)	0
4	Turn freeze on or off	1:4 Freeze On/Off (only for DES6800)	Off
5	Select type of freeze	1:5 Freeze Mode Field 1/Field 2/Frame (only for DES6800)	Field 1
6	Enable or disable hot switch	1:6 Hot Switch Enable/Disable (only for DES6800)	Enable
7	Select loss of video mode	1:7 LossVid Mode Disp Test/Pass/Hot Switch	Hot Switch
8	Turn TSG on or off	1:8 TSG On/Off	Off
9	Select color bar or black field	1:9 TSG Sel Color Bar/Black	Black
A		1:A Reserve	
B		1:B Reserve	
C		1:C Reserve	
D		1:D Reserve	
E		1:E Reserve	
F		1:F Reserve	

Table3-4 Functional Parameters of Bank 1   (625 line rate)

SW1 Position	Function Description	OSD Text	Default
0	Select bank	1:0 Bank Selection	Bank 0
1	Selects the genlock Mode	1:1 Genlcok Mode Free Run/Ref/Input	Ref
2	Adjust horizontal timing	1:2 H Phase 0~1727	0
3	Adjust vertical timing	1:3 V Phase 0~624	0

SW1 Position	Function Description	OSD Text	Default
4	Turn freeze on or off	1:4 Freeze On/Off	Off
5	Select type of freeze	1:5 Freeze Mode Field 1/Field 2/Frame	Field 1
6	Enable or disable hot switch	1:6 Hot Switch Enable/Disable	Enable
7	Select loss of video mode	1:7 LossVid Mode Disp Test/Pass/Hot Switch	Hot Switch
8	Turn TSG on or off	1:8 TSG On/Off	Off
9	Select color bar or black field	1:9 TSG Sel Color Bar/Black	Black
A		1:A Reserve	
B		1:B Reserve	
C		1:C Reserve	
D		1:D Reserve	
E	Pass or blank VBI	1:E Line6 VBI Blank/Pass	
F	Pass or blank VBI	1:E Line7 VBI Blank/Pass	

Table3-5 Functional Parameters of Bank 2　　（525 line rate）

SW1 Position	Function Description	OSD Text	Default
0	Select bank	2:0 Bank Selection	Bank 0
1		2:1 Reserve	
2		2:2 Reserve	
3	Pass or blank VBI	2:3 Line10 VBI Blank/Pass	Pass
4	Pass or blank VBI	2:4 Line11 VBI Blank/Pass	Pass
5	Pass or blank	2:5 Line12 VBI Blank/Pass	Pass
6	Pass or blank	2:6 Line13 VBI Blank/Pass Line 13 VBI	Pass
7	Pass or blank VBI	2:7 Line14 VBI Blank/Pass	Pass
8	Pass or blank VBI	2:8 Line15 VBI Blank/Pass	Pass

SW1 Position	Function Description	OSD Text	Default
9	Pass or blank VBI	2:9 Line16 VBI Blank/Pass	Pass
A	Pass or blank VBI	2:A Line17 VBI Blank/Pass	Pass
B	Pass or blank VBI	2:B Line18 VBI Blank/Pass	Pass
C	Pass or blank VBI	2:C Line19 VBI Blank/Pass	Pass
D	Pass or blank VBI	2:D Line20 VBI Blank/Pass	Pass
E	Pass or blank VBI	2:E Line21 VBI Blank/Pass	Pass
F		2:F Reserve	

Table3-6 Functional Parameters of Bank 2   （625 line rate）

SW1 Position	Function Description	OSD Text	Default
0	Select bank Bank	2:0 Bank Selection	Bank 0
1	Pass or blank VBI	2:1 Line8 VBI Blank/Pass	Pass
2	Pass or blank VBI	2:2 Line9 VBI Blank/Pass	Pass
3	Pass or blank VBI	2:3 Line10 VBI Blank/Pass	Pass
4	Pass or blank VBI	2:4 Line11 VBI Blank/Pass	Pass
5	Pass or blank VBI	2:5 Line12 VBI Blank/Pass	Pass
6	Pass or blank VBI	2:6 Line13 VBI Blank/Pass	Pass
7	Pass or blank VBI	2:7 Line14 VBI Blank/Pass	Pass
8	Pass or blank VBI	2:8 Line15 VBI Blank/Pass	Pass
9	Pass or blank VBI	2:9 Line16 VBI Blank/Pass	Pass
A	Pass or blank VBI	2:A Line17 VBI Blank/Pass	Pass
B	Pass or blank VBI	2:B Line18 VBI Blank/Pass	Pass

SW1 Position	Function Description	OSD Text	Default
C	Pass or blank VBI	2:C Line19 VBI Blank/Pass	Pass
D	Pass or blank VBI	2:D Line20 VBI Blank/Pass	Pass
E	Pass or blank VBI	2:E Line21 VBI Blank/Pass	Pass
F	Pass or blank VBI	2:F Line319 VBI Blank/Pass	Pass

Table3-7 Functional Parameters of Bank 3 (525 line rate)

SW1 Position	Function Description	OSD Text	Default
0	Select bank	3:0 Bank Selection	Bank 0
1		3:1 Reserve	
2		3:2 Reserve	
3		3:3 Reserve	
4	Pass or blank VBI	3:4 Line273 VBI Blank/Pass	Pass
5	Pass or blank VBI	3:5 Line274 VBI Blank/Pass	Pass
6	Pass or blank VBI	3:6 Line275 VBI Blank/Pass	Pass
7	Pass or blank VBI	3:7 Line276 VBI Blank/Pass	Pass
8	Pass or blank VBI	3:8 Line277 VBI Blank/Pass	Pass
9	Pass or blank VBI	3:9 Line278 VBI Blank/Pass	Pass
A	Pass or blank VBI	3:A Line279 VBI Blank/Pass	Pass
B	Pass or blank VBI	3:B Line280 VBI Blank/Pass	Pass
C	Pass or blank VBI	3:C Line281 VBI Blank/Pass	Pass
D	Pass or blank VBI	3:D Line282 VBI Blank/Pass	Pass
E	Pass or blank VBI	3:E Line283 VBI Blank/Pass	Pass
F	Pass or blank VBI	3:F Line284 VBI Blank/Pass	Pass

Table3-7 Functional Parameters of Bank 3   (625 line rate)

SW1 Position	Function Description	OSD Text	Default
0	Select bank	3:0 Bank Selection	Bank 0
1	Pass or blank VBI	3:1 Line320 VBI Blank/Pass	Pass
2	Pass or blank VBI	3:2 Line321 VBI Blank/Pass	Pass
3	Pass or blank VBI	3:3 Line322 VBI Blank/Pass	Pass
4	Pass or blank VBI	3:4 Line323 VBI Blank/Pass	Pass
5	Pass or blank VBI	3:5 Line324 VBI Blank/Pass	Pass
6	Pass or blank VBI	3:6 Line325 VBI Blank/Pass	Pass
7	Pass or blank VBI	3:7 Line326 VBI Blank/Pass	Pass
8	Pass or blank VBI	3:8 Line327 VBI Blank/Pass	Pass
9	Pass or blank VBI	3:9 Line328 VBI Blank/Pass	Pass
A	Pass or blank VBI	3:A Line329 VBI Blank/Pass	Pass
B	Pass or blank VBI	3:B Line330 VBI Blank/Pass	Pass
C	Pass or blank VBI	3:C Line331 VBI Blank/Pass	Pass
D	Pass or blank VBI	3:D Line332 VBI Blank/Pass	Pass
E	Pass or blank VBI	3:E Line333 VBI Blank/Pass	Pass
F	Pass or blank VBI	3:F Line334 VBI Blank/Pass	Pass

Pay attention to the followings when configuration

Composite in Video Path Processing:

The composite in video path can be processed before decoding.

The following processing functions are available for the video composite input signals:

   1) Input Video Gain – adjust the input video gain in percent relative to 100% (100%=1 V p-p)

   Note: only effect when AGC is OFF

   2) Input Chroma Gain – adjust the percentage of chroma gain relative to 100.

Note: only effect when ACC is OFF

3) AGC and ACC on or off – the Auto Gain Control (AGC) and Auto Chroma Control (ACC) are set to default to the on condition. AGC operation is based on sync tip.

Decoded Video Path Processing:

The following processing functions are available for the decoded signals:

1) Luma Gain – adjusts the percentage of luminance relative to white.

2) Chroma Gain – adjusts the percentage of saturation and chroma gain relative to 100% saturation.

3) Black Level – adjusts amount of brightness/Y offset in IRE.

4) Hue – adjusts hue/chroma phase in degrees. Available in 525 mode only.

5) TSG (75% Color Bars or Black Field) – when on, enables the internal test signal generator to output a 75% Color Bars or Black Field test signal to the output.

Note: test signals are not adjustable in the Video Processing Controls.

6) On Screen Display (OSD) – enables or disables the On Screen Display on the 2 output channel. Jumper JP5 on module must be set to OSD On control.

7) Decode Mode – select the type of decoding (filtering) from comb adaptive or notch. Adaptive decoding is 3-line in NTSC and 5-line in PAL.

8) Programmable VBI and Active Picture Lines.

9) VBI Line – blank or pass VBI lines can be selected on a line-by-line basis.

Video Timing and Freeze Controls

With a DES6800N module, the following Frame Sync timing adjustments can be made:

1) Horizontal Time – adjusts the horizontal delay on the output in pixels. This will add an additional delay of up to one line.

2) Vertical Timing – adjusts vertical delay in line increments.

3) Loss Video Mode, Auto Freeze – when Auto Freeze is enabled, the output will automatically freeze on the last valid field when the input signal is lost.

4) Hot Switch – when Hot Switch is enabled, if the input signal contains non-synchronous switches, the module will briefly provide a field freeze until it can lock to the new input timing.

5) Freeze – enable or disable manually freezes the output signal.

Freeze Mode

1) Field 1 – manually freezes the output signal on field 1.

2) Field 2 – manually freezes the output signal on field 2.

3) Frame – manually freezes the output signal on the full frame.

A field freeze provides less resolution and no motion artifacts in the output. In frame mode, the resolution is higher since both fields are present, but the presentation of the two fields can cause motion artifacts.

OSD Mode

In OSD Mode, the position of current rotary switch and parameters of navigation toggle switch can be displayed. The OSD can be turned off with either the local or remote controls before broadcasting the signal. When control is enabled with jumper JP5, it can be controlled with either local or remote controls.

Set the Jumper

Setting the following 5 jumpers is required

- JP1 set input or termination
- JP2 set reference selection

- JP3-set reference input
- JP4-set local or remote control
- JP5-OSD   enable switch

Chapter 4   Specifications

In chapter four, the specifications about DEC/DES6800 are introduced as follows：

- Analog video input
- SDI video processing
- SDI video output
- Phase

Analog Video Input

- Standards   NTSC, PAL (Manual)

  NTSC, NTSC-J, NTSC-4.43, PAL, PAL-M, SECAM (Auto)
- Level   1V p-p ±3 dB
- Impedance   75 Ω
- Return Loss   >40 dB to 5.8 MHz
- Video Level Adjustment +6 dB/-1 dB

SDI Video Processing

- Input   12-bit 4X quantizing
- Decoding   5-line adaptive comb filter
- Frequency Response   ±0.1 dB to 5.8MHz
- SNR   >60 dB 10 kHz to 6 MHz

SDI Video Output

- Number   4
- Format   259M-C; 270 Mb/s
- Connector   BNC per IEC 169-8
- Impedance   75 Ω
- Return Loss   >18 dB to 270 MHz
- Signal Level   800mV ±10%
- DC Offset   0.0 V ±0.5 V
- Overshoot   <10% of amplitude (all outputs terminated)
- Jitter   <500ps
- Memory Size   2 fields(1frame)
- Data Path   10 bits

Phase

- H. Adjustment Range: 1 line，   37ns steps
- V. Adjustment Range: 1 frame，   1 line step

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.