DAC6800
SDI to YUV Converter

User Manual

OSEE TECHNOLOGY CO., LTD.

Product Information

Model: DAC6800 SDI to YUV Converter
Version: V010000
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Company

OSEE TECHNOLOGY CO., LTD.

Contact Information

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About this manual

Important

The following symbols are used in this manual:

Tips

- The further information or know-how for described subjects above which helps user to understand them better.

Warning

- The safety matters or operations that user must pay attention to when using this product.

Contents

The user manual applies to the following device types:
DAC6800

Any of the different specifications between the device types are elaborated. Before reading the manual, please confirm the device type.

Contents

Chapter 1 Overview

DAC6800 provides 10-bit conversions from 525- line and 625-line SDI to 525-line and 625-line analog component signals. The signal flow of DAC6800 is shown as below:

Signal Flow:

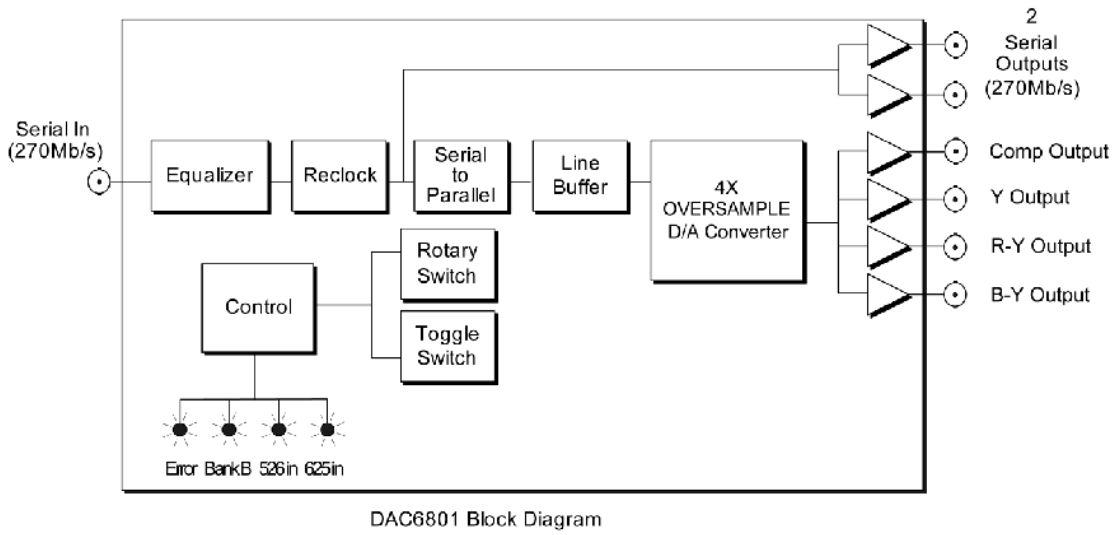

Figure 1 Signal Flow of DAC6800

The DAC6800 offers the following features:

Features

- Features built-in color bars, 4x over-sampling output, frame sync, delay mode.
- Supports up to 10 DAC6800 in one frame, and the DAC6800 could be used to instead of the same type of LEICTH module in LEITCH frame
- Supported output formats include 525-line and 625-line RGB, SPMTE/EBU component, Betacam, and it is automatic identified to 525-line NTSC or 625-line PAL
- Use the advanced 10bit digital conversion technology to deal with the input signals with more stability and reliability
- Supports adjustments including Intensity level, Black level, Chroma level and color phase
- Supports vertical blanking lines
- Supports to control the SETUP in 525 mode

- Supports adjustment including H phase, V phase, and Subcarrier phase
- Supports output built-in color bar as test signal
- Supports select as frame synchronizer or delay mode
- Support input cable equalization for up to 300m of Belden 8281cable

Chapter 2 Safety

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.

Warnings:

Read, keep and follow all of these instructions for your safety. Heed all warnings.

⚠Warning

- Converter
  - Upgrading of the converter is subject to change without notice.。
  - Contact your Customer Service representative if parts are missing or damaged.

⚠Warning

- Position
  - Do not block any ventilation openings.
  - Do not use this unit near water.
  - Do not expose the unit to rain or moisture.
  - Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that product heat.
  - A nameplate indicating operating voltage, etc., is located on the rear panel.
  - The socket-outlet shall be installed near the equipment and shall be easily accessible.

Chapter 3 Unpack and Installation

Unpack:

When unpacking the device, please verify that none of the components listed in the following table are damaged or lack. If there is any missing, contact your distributors or Osee Technology Co., Ltd. for it.

Table 3-1 Packing List

No.	Item	Quantity	Comments
1	Converter	1	DAC6800
2	Interface board	1	
3	Attachments	1	
4	User manual	1	
5	warranty card	1	
6	Certificate card	1	

Installation:

Tips

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

Tips

- **About Unpacking and Shipping**
  - This product was carefully inspected, tested, and calibrated before shipment to ensure years of stable and trouble-free service. Before you install this unit, do the followings:
    - ☐ Check the equipment for any visible damage that may have occurred during transit.
    - ☐ Confirm receipt of all items on the packing list.

- ☐ Contact your dealer if any item on the packing list is missing.
- ☐ Contact the carrier if any item is damaged.
- ☐ Remove all packaging material from the product before you install the unit.
- ☐ Retain at least one set of the original packaging materials, in the event that you need to return a product for servicing.

- If the original package is not available, you can supply your own packaging as long as it meets the following criteria:
  - ☐ The packaging must be able to withstand the product's weight.
  - ☐ The product must be held rigid within the packaging
  - ☐ There must be at least 5 cm of space between the product and the container.
  - ☐ The corners of the product must be protected.
- Ship products back to us for servicing prepaid and, if possible, in the original packaging material. If the product is still within the warranty period, we will return the product prepaid after servicing.

Installation

1. Prepare for installation

Make sure you have prepared the followings before mount the converter:

- Inspect for any apparent physical damage that may have occurred in transit.
- Make sure you have received all the components listed in packing list.
- if there are any anti-static package or other packages, please take off them.
- Keep the package in case of future usage.

2. Install the module

Follow the following steps to install the module:

- ■ Install a back connector

First, install the back connector of DAC6800 at the rear of the frame. Locate the position for back connector and insert the back connector along the slot. The interfaces of DAC6800 are as shown in ***Figure 3-1*** and Figure 3-2.

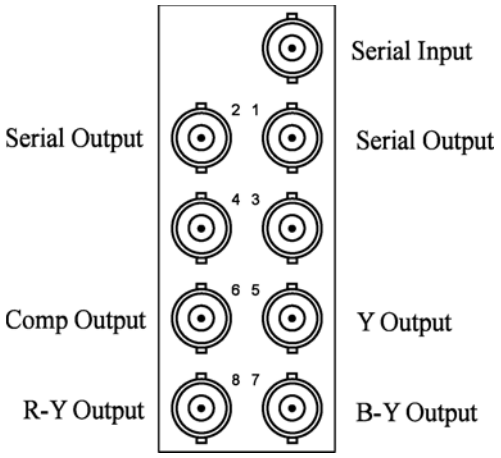

Figure 3-1 The Interfaces of DAC6800 Module in 6800 Frame

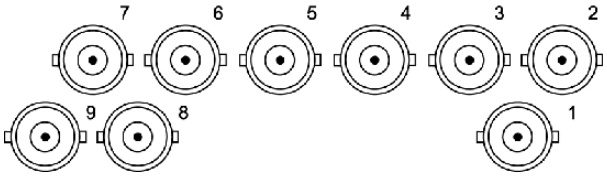

Figure 3-2 The Interfaces of DAC6800 Module in 1U Frame

■ Connect to the signals

The relationships of the signal types and interfaces of DAC6800 are shown as below:

No.	Interface	Description
1	SDI INPUT	HD/SD-SDI input, with 75Ω rated connectors
2/3	SDI OUTPUT	HD/SD-SDI output with clock recovery
6	Y OUTPUT	Composite analog output or Y component of YUV signal
7	COMP OUTPUT	Composite analog output
8	B-Y/Pb OUTPUT	Pb component of YUV output signal
9	R-Y/Pr OUTPUT	Pr component of YUV output signal

The unused interface could be with no terminal impedance, and the DAC6800 module is hot plug.

Chapter 4 Operation and Control

This chapter describes the main functionality and working mode of DAC6800.

4.1 Instructions on Control and Operation

The control switches are at the edge of the module, as shown in Figure 4-1:

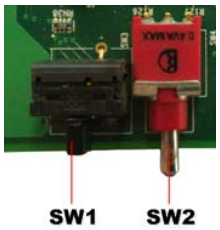

Figure 4-1 The Position of Control Switches

The function and usage of the switch are as follows:

1. **SW1**

   It is a rotary switch which has 16 positions coded from 0 to F, it is used to select and point to a parameter item. The selection range is: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, A, B, C, D, E, F.

Figure 4-2 Rotary Switch Pointing at 0

   For example: as shown in Figure 4-2, the pointer is pointing at the position 0, that is Bank Select as shown in Table 4-1.

2. **SW2**

   It is a toggle switch which has 3 positions which will get back to the middle position automatically, It is used to set the parameter value which has been selected by SW1 through toggling up or down the handle.

Figure 4-3 Toggle Switch Moving Up And Down

For example: as shown in Figure 4-3, there are three positions of SW2, but the handle will always be back to the middle position automatically after toggling it up or down. After you switching SW1 to a parameter item, toggle SW2 up to set the parameter value be increases(+), and toggle down to set the parameter value be decreases(-).

Tips

- When setting parameters, the LED indicators will indicate the status of the module.
- SW1 identifies the rotary switch, and SW2 identifies the toggle switch in this article.

4.2 Instructions on Parameter Settings

It will introduce how to set the parameters and the meanings of Bank positions in the followings.

4.2.1 Parameter Settings

Do as the following instructions when setting DAC6800:

- The default status is BANK A when the DAC6800 is powered on, and the BANK B LED is off at the moment. Check the status of the input signals and the reference signal by the color of the ERROR and REF OK indicator.
- Keep SW1 to be the UP or DOWN position to realize continue adjustment.

Set the functions of DAC6800 by selecting the position of BANK. The SW1 has two bank modes: Bank A and Bank B.

- Switch SW1 to the 0 position which is always used as selecting BANK mode.
- Toggle SW2 up to select as BANK A, and the BANK B LED is off, otherwise, toggle SW2 down to select as BANK B, and the BANK B LED is on.

You can judge whether you have selected a Bank by BANK B LED indicator at the edge of the module, refer to Table 4-3 for details.

4.2.2 Bank Items

The functions and value range of each Bank menu items of SW1 are as shown in ***Table 4-1***, and ***Table 4-2***.

Table 4-1 Bank A Setting

Position	Function	Value	Default
0	Bank Select	+: Bank A -: Bank B	Bank A
1	Mode selection	+: Auto -: Manual	Auto
2	Manual mode selection	+: 525 -: 625	
3	SETUP setting*1	+: with setup -: no setup	with setup
4	Vertical blanking	+: with vertical blanking -: no vertical blanking	with vertical blanking
5	Chroma signal	+: with chroma signal -: no chroma signal	with chroma signal
6	Color Burst*2	+: with color burst -: no color burst	with color burst
7	Chrominance bandwidth	+: 1.3MHz -: 0.65MHz	1.3MHz
8	Test signal	+: 75% color bar -: no 75% color bar	
9	Reserved	-	-
A	Intensity level	+: Increase/-: Decrease	Standard
B	Black level	+: Increase/-: Decrease	Standard
C	Chroma level	+: Increase/-: Decrease	Standard
D	Color phase*3	+: Increase/-: Decrease	Standard
E	Default*4(Amplifier)	+: Invalid/-: Default	
F	Default*5	+: Invalid/-: Default	

Table 4-2 Bank B Setting

Position	Function	Value	Default
0	Bank Select	+: Bank A/-: Bank B	Bank A

Position	Function	Value	Default
1	H phase shifting	+: Increase/-: Decrease	
2	Subcarrier phase shifting	+: Increase/-: Decrease	
3~F	Reserved	-	-

Notes: the numbers in the table labeled with a star should follow the instructions below:
*1, The SETUP is unavailable in 625 format mode.
*2. The COLOR BURST is unavailable when there is a chroma signal.
*3. The color phase is unavailable in 625 format mode.
*4. Set the 9, A, B, C, D bit of BANK A to be the default value.
*5. Set all bits to be the corresponding default value.
*6. Set SETUP to be OFF when selecting as SMTPE/EBU, and set SETUP to be ON when selecting as Betacam.

4.3 LED Indicator

The LED indicators show different color when expressing different meanings, as shown in Table 4-3:

Table 4-3 The Functionality of Each LED Indictor

Indicator	Color	Description
ERROR	Red	If LED is on, it indicates there is no input signal or the input signal is wrong.
BANK B	Orange	It indicates which Bank you have selected. If it is in BANK A state, the LED is off. If it is in BANK B state, the LED is on.
625	Green	If LED is on, it indicates that it is in 625 mode.
525	Green	If LED is off, it indicates that it is in 525 mode.
REF OK	Orange	If LED is on, it indicates that is the reference signal is matched with the input signal. If LED is off, it indicates that is the reference signal is not matched with the input signal, or the reference signal is not existed.
FREEZE	RED	If LED is on, it indicates that this module is working in freeze mode.

Chapter 5 Specifications

1. Product detailed information

Specification	Values
Video Standard	SMPTE259M(270Mb/s)
Input Impedance	75Ω
Return Loss	>15dB,5MHz to 270MHz
Cable Equalization	30dB@270Mb/s(Max.)
SDI Output	2Ch with clock recovery
Output Impedance	75Ω
Return Loss	>15dB,5MHz to 270MHz
Output Level	800Mv±10%
Rise and Fall Time	700~1000 ps
Overshoot	<10% of amplitude
Output Jitter	<350ps
DC Offset	0V+/-0.05V
Analog Output	1Ch YUV, EBU, Betacam
Impedance	75Ω
Output Return Loss	>40dB to 5.5MHz
Output Isolation	>34dB to 5.5MHz
Frequency Response	+/-0.1dB to 5.5MHz
Differential Gain	0.6
Differential Phase	0.7
Propagation delay	+/-10ns to 5MHz
Signal to Noise Ratio	61dB
Output Phase	Line phase: steps 37ns, adjustable V phase: steps 1 line, adjustable Subcarrier phase: 360deg., adjustable
Power Consumption	4.5W(positive); 0.5W(negative)

Tips

- Specifications are subject to change without notice.

----------No Text Below----------

FOR MORE INFORMATION PLEASE VISIT: http://www.osee-dig.com/
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