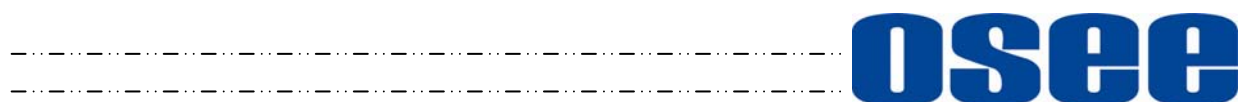


# SFS6860N

## SD-SDI Frame Synchronizer

# USER MANUAL



### **Product Information**

**Model:** SFS6860N SD-SDI Frame Synchronizer  
**Version:** V010000  
**Release Date:** May 20th, 2008

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### **Company**

OSEE TECHNOLOGY CO., LTD.

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# Chapter 1 Introduction

## Overview

The SFS6860N is a serial component frame synchronizer, which can synchronize with one genlock reference signal and provide one audio synchronization signal (DATA I/O) for an audio processing module. It allows infinite phasing in the range of one field relative to reference and retains all ancillary data of signal source. The SFS6860N supports NTSC and PAL-B as reference signal and can automatically switch between 525 and 625 line standards.

The modules can be installed in 6800N series frame.

## Features

The SFS6860N offers the following features:

- ✓ 10-bit serial 4:2:2 frame synchronizer
- ✓ Supporting 525/625 standards, either auto switch or manually
- ✓ One SDI input, one analog composite reference input
- ✓ 4-channel reclocked and synchronized SDI outputs
- ✓ One audio synchronization signal output
- ✓ Generating internal testing signal
- ✓ Filtering 270Mb/s video low frequency jitter
- ✓ Retaining or clear all ancillary data
- ✓ Supporting GPI
- ✓ Supporting delay and synchronization mode
- ✓ EDH reinsertion
- ✓ 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

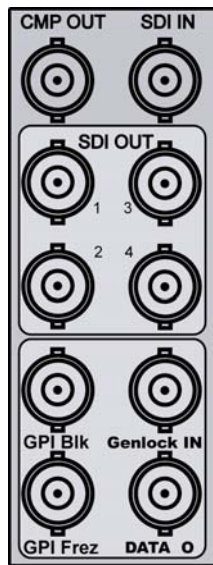
Figure 1-1 shows the boards of SFS6860N



**Fig. 1-1** the Board of SFS6860N

### Back Connector



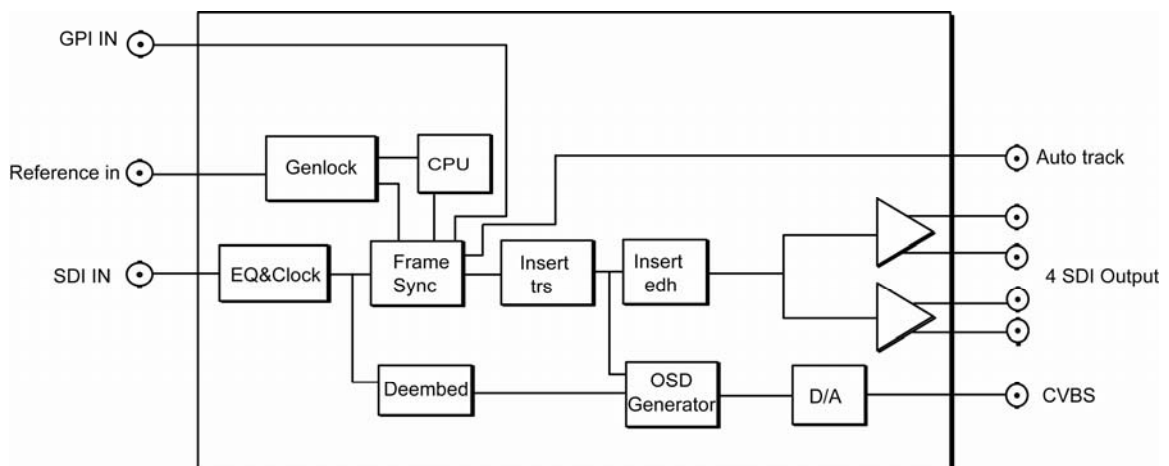


**Fig.1-2** Back Connector of SFS6860N

**Tab. 1-1** Description of SFS6860N Back Connector

Item	Description
CMP OUT	ANALOG Composite output
SDI IN	SDI input
SDI OUT 1~4	SDI output
GPI Blk	Black Burst GPI
GPI Frez	Freeze GPI
Genlock	Video synchronized signal input
DATA O	Audio tracking signal output

Signal Flow



**Fig. 1-3** Signal Flow of SFS6860N

## 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 SFS6860N 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. Please 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
SFS6860N	SFS6860N 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 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.

## Making the Connections

Please connect signals based on Fig. 1-2.

## Removing the Module

Follow the following steps to remove SFS6860N 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

There exist four 3-pin jumpers, and the following table gives their definition.

**Tab. 2-3** Description of SFS6860N Jumpers

Item	Description
JP2 (REF SELECTION- <i>choosing synchronized signal</i> )	Local. Synchronization signal provided by back connector Please set JP2 at ON.
	Frame: Synchronization signal provided by 6800N frame. Note: Ensure only one module has chosen 75Ω termination to the same frame, otherwise, error will occur.
JP3(TERMINATION)	On/off. The default setting is on. When setting JP3 at on, select 75Ω termination. When setting JP3 at off, not select 75Ω termination.
JP4	SDI_03/CMP_03. You must set JP4 at SDI_03 (Please don't change the default setting).
JP5	SDI_04/CMP_04. You must set JP4 at SDI_04 (Please don't change the default setting).
JP18(used to choose control mode)	(LOC/RMT)/LOCAL, the default setting is LOC/RMT.

## LED Indicator

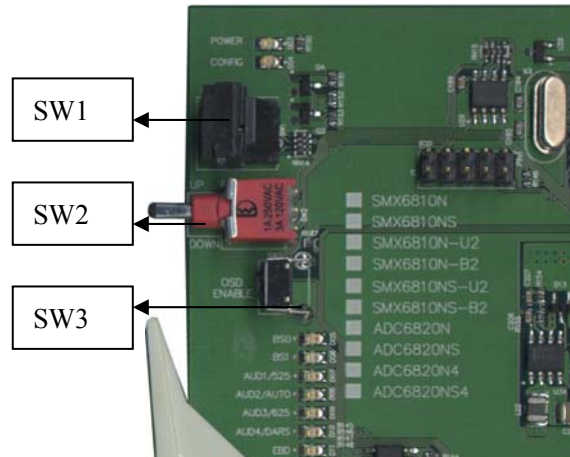
**Table 2-4** LED Indicator Function

Item (color)	Description
POWER (green)	On: Power is supplied.
CONFIG (orange)	On: The device is Initializing.
DBS0/DBS1 (orange)	On: select Bank
AUD1 (green)	On: In SDI input, there is information about Group 1. Off: In SDI input, there is no information about Group 1.
AUD2 (green)	On: In SDI input, there is information about Group 2. Off: In SDI input, there is no information about Group 2.
AUD3 (green)	On: In SDI input, there is information about Group 3. Off: In SDI input, there is no information about Group 3.
AUD4 (green)	On: In SDI input, there is information about Group 4. Off: In SDI input, there is no information about Group 4.
EBD (green)	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 (green)	On: the input conforms to the video format that you have set. Flickering: the input doesn't conform to the video format that you have set Off: no signal input.
625 (green)	On: the input conforms to the video format that you have set. Flickering: the input doesn't conform to the video format that you have set. Off: no signal input.
AUTO (green)	On: Video standard is set to AUTO, and it can be auto detected.
DARS (green)	On: There inputs a Genlock/Reference signal and the synchronized signal conforms to SDI input. Flickering: There inputs a Genlock/Reference signal but the synchronized signal doesn't conform to SDI input Off: There is no Genlock/Reference signal.

## 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 3-position toggle switch, used to adjust the parameters 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 Position	Function	OSD Text	Default
0	Select Bank	0:0 Bank Select Bank 0/1/2	Bank 0
1	Select Video Standard	0:1 Vid Std Sel 525/625/AUTO	AUTO
2~5	Reserved		
6	Black Clip	0:6 Black Clip On/ OFF	OFF
7	synchronize Mode	0:7 Sync Mode Frame Sync / Delay	Frame Sync
8	Horizontal phase	0:8 H phase 0us to 63.963us with 0.037us	0.000

SW1 Position	Function	OSD Text	Default
		step	
9	Vertical phase	0:9 V phase 0 Line to 624 Line with 1 step (PAL format) 0 Line to 524 Line with 1 step (NTSC format)	0
A	Force Freeze	0:A Force Freeze On/OFF	OFF
B	Freeze Type	0:B Freeze Type Field 1/Field 2/Frame	Field 1
C	Force Black	0:C Force Black On/OFF	OFF
D	Loss Video Mode	0:D LOV Mode Black/pass/freeze	freeze
E	Reserved	1: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	Bank 0
1	Vertical ancillary data	1:1 VANC Pass/blank	pass
2	Horizontal ancillary data	1:2 HANC Pass/blank	pass
3	Audio Group display	1:3 Audio Group Group 1/2/3/4	Group 1
4	Meter 1 Type mode	1:4 Meter 1 Type Off/VU/PPM/VU+PPM	VU+PPM
5	Meter 2 Type mode	1:5 Meter 2 Type Off/VU/PPM/VU+PPM	VU+PPM
6	Meter 1 horizontal Position	1:6 Meter 1 H Pos 0 to 179 with 1 step	7
7	Meter 2 horizontal Position	1:7 Meter 2 H Pos 0 to 179 with 1 step	168
8	Test Level	1:8 Test Level -18dB/-20dB	-18dB

SW1 Position	Function	OSD Text	Default
9	Black Threshold	1:9 Black Thd 1 to 255 with 1 step	30
A	Freeze Delay	1:A Freeze Delay 1 to 255 with 1 step	30
B	Freeze Threshold	1:B Freeze Thd 1 to 255 with 1 step	30
C	No Audio Delay	1:C No Aud Delay 1 to 255 with 1 step	30
D	No Audio Threshold	1:D No Aud Thd -72/-66/-60/-54/-48dB	-60dB
E	GPI 1 Force Freeze	1:E GPI 1 Freeze On/OFF	OFF
F	GPI 2 Force Black	1:F GPI 2 Black On/OFF	OFF

Tab. 3-3 Bank 2 Function Setting

SW1 Position	Function	OSD Text	Default
0	Select Bank	2:0 Bank Select Bank 0/1/2	Bank 0
1	In Video Std	2:1 Video Std Auto/625/525	Read only
2	Detect SDI freeze	2:2 SDI Freeze Freeze/No	Read only
3	Detect SDI black	2:3 SDI Black Black/No	Read only
4	Detect SDI status	2:4 SDI Stu Detect/Loss	Read only
5	Detect Reference match	2:5 Reference Match/Mismatch/Loss	Read only
6	In audio group	2:6 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
7	audio status	2:7 Aud Status O: overload,V: normal,	Read only

SW1 Position	Function	OSD Text	Default
		X: no audio	
8	No EDH Packet	2:8 EDH Packet no EDH, Detect EDH, EDH Err	Read only
9	EDH Error counter (take SW2 up or down to reset the counter)	2:9 EDH Err Num 0 to 32767	Read only
A		2:a Reserve	Read only
B		2:B Reserve	Read only
C		2:C Reserve	Read only
D	Modular mode	2:D Modular Mod SFS6880N	Read only
E	Version information	2:E Version info HW1.0 FW1.0	Read only
F	Hardware status	2:F Hardwrar sta correct/error	Read only

## Chapter 4 Specifications

In this chapter, the specifications in the following subjects are introduced:

- ✓ SDI Video Input
- ✓ SDI Video Output
- ✓ Analog Composite Video Output
- ✓ DATA I/O

### 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 to 1500ps (20% to 80% of amplitude)
Overshoot	<10%
Jitter	<0.2 UI (740ps) Peak

## Analog Composite Video Output

**Table 4-3** Analog Composite Video Output Specifications

Item	Parameter
Standards	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°
Signal to noise	75dB to 5.75MHz

## DATA I/O

**Table 4-4** DATA I/O Specifications

Item	Parameter
Output impedance	75 Ω /high resistance(adjustable jumper)
Output cable length	100 meters
Return loss	<-20dB

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.