



# Synapse

## HNS400

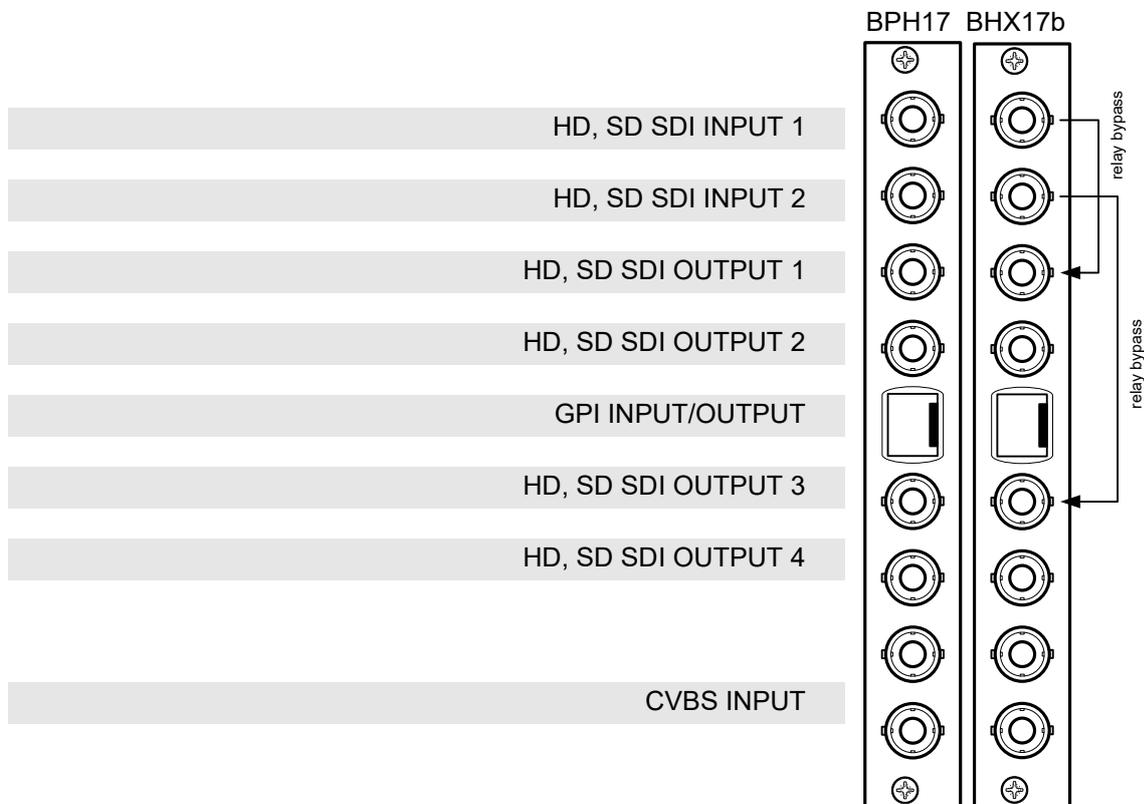
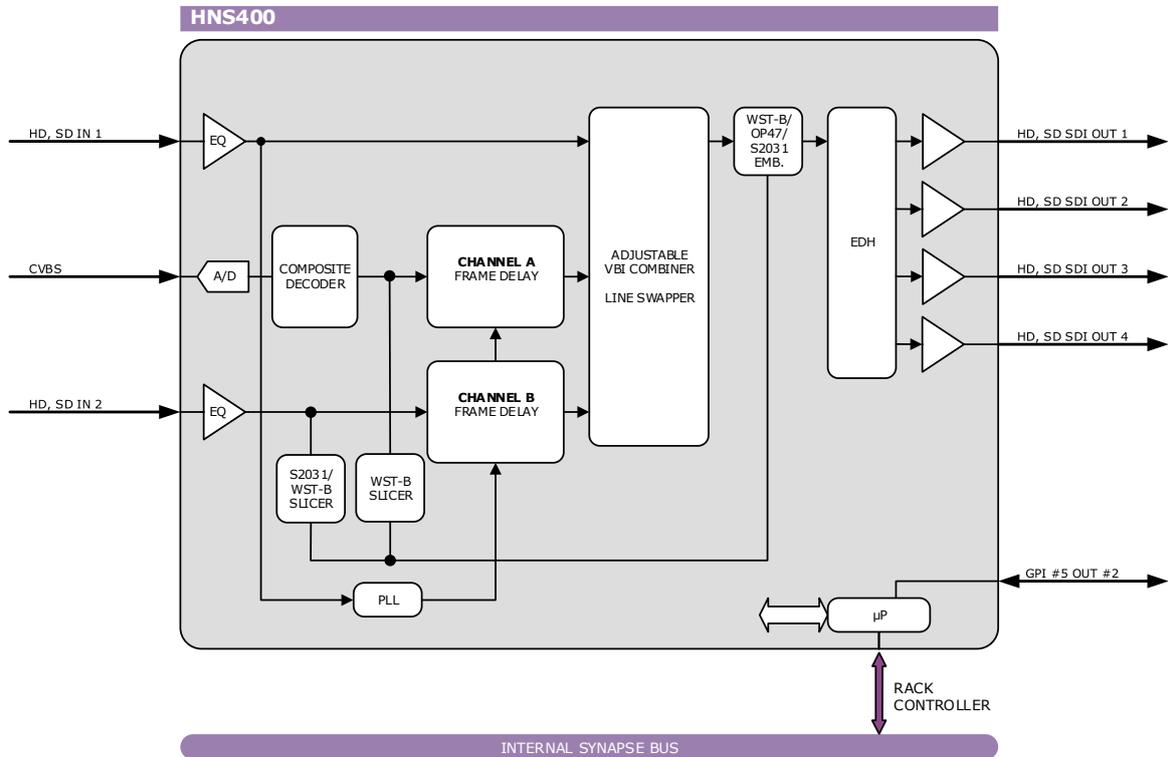
**VBI/VANC line inserter/swapper/transcoder (data bridge) for composite, HD and SD SDI Inputs**

A Synapse® product



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Block schematic & I/O panel



## Features

The HNS400 is a HD and SD SDI VBI/VANC inserter with composite and SDI inputs and an HD, SD SDI outputs. VBI (for example Teletext) or VANC (OP47, S2031) information present in the composite or SDI signal can be transcoded and inserted into the main HD or SD SDI signal. The HNS400 can insert lines from both composite and SDI domain into lines in the SDI domain. For example, line 7 of the CVBS input can be inserted into line 335 of the SDI signal.

This line exchange is transparent to embedded audio that might be present in the SDI domain. The complete insertion table is placed below.

- WST-B translation into OP47 or S2031
- S2031 translation into WST-B
- Lines can be swapped, blanked or set transparent
- Built-in proc-amp
- 2 processed outputs
- Locks to SDI input
- Full control and status monitoring through the front panel of the SFR08/SFR18 frame and the Ethernet port (ACP)

## Conversion abilities

The HNS400 card is able to switch the following lines:

FUNCTIONS		Output					
		576i50(625)	480i59.94(525)	720p50	720p59.94	1080i50	1080i59.94
Input	576i50(625)	Bridge VBI		WST-B to OP47* /S2031		WST-B to OP47* /S2031	
	480i59.94(525)		Bridge VBI				
	720p50	S2031 to WST-B		Bridge VANC			
	720p59.94				Bridge VANC		
	1080i50	S2031 to WST-B				Bridge VANC	
	1080i59.94						Bridge VANC

\* = OP47-SDP

Note: input format = HD,SD SDI 2 input format or CVBS input

Note: output format = HD,SD SDI 1 input format

Note: different field-rates on inputs cannot be mixed, empty squares are No Operation

Effective on lines	Field 1	Field 2
576i50(625)	7..22	320..335
480i59.94(525)	11..21	274..284
720p50	8..25	
720p59.94	8..25	
1080i50	8..20	571..583
1080i59.94	8..20	571..583

## Applications

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- Generic data bridge application where composite domain vertical blanking lines are inserted in the SDI domain
- Converter for an analogue teletext carousel to HD SDI

## Ordering information

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### Module:

- **HNS400-I/O**: VBI line inserter/swapper (data bridge)

### Standard I/O:

- **BPH17-PANEL**: I/O panel for HNS400

### Relay bypass I/O:

- **BHX17b-PANEL**: I/O-panel for HNS400 with relay bypass

## Specifications

### Video Input (CVBS)

Standard	PAL (ITU624-4), NTSC (SMPTE 170M)
Number of Inputs	1
Impedance	75 Ohms
Return Loss	> 35dB up to 10MHz
Frequency Response	< ±0.25dB (100KHz to 4.2MHz)
Differential Gain	< ±0.5% typical
Differential Phase	< ±0.2° typical
Noise Floor	< -57dB RMS (black video, 15KHz to 5MHz)
C/L Gain	< ±0.5%
C/L Delay	< ±9ns
Minimum Delay	3 lines

### Serial Video Input (SDI)

Standard	SMPTE 292M (1.5Gb/s), 625/50 or 525/59.94 SMPTE 259M-C (270Mb/s) with SMPTE 272M embedded audio
Number of Inputs	1
Equalization	Automatic to 300m @ 270Mb/s with Belden 1694A or equivalent cable
Return Loss	> 15dB up to 270MHz

### Serial Video Output

Standard	SMPTE 292M (1.5Gb/s), SMPTE 259M 525/59.95 or 625/50
Number of Outputs	2
Connector	BNC
Signal Level	800mV nominal
DC Offset	0V ±0.5V
Rise/Fall Time	900ps nominal
Overshoot	< 10% of amplitude
Return Loss	> 15dB to 1,5Gb/s
Jitter	< 0.1UI

### Ethernet

Standard	10Base-T, 100Base-Tx IEEE 802.3
Connector	8P8C

### Reference Video Input

Standard	PAL (ITU624-4), NTSC (SMPTE 170M)
Number of Inputs	2 on SFR18, 2 on SFR08, 1 on SFR04
Connector	BNC
Signal Level	1V nominal
Impedance	High impedance, with loop for termination
Return Loss	> 25dB to 10MHz

### Teletext and subtitle standards

Standard	WST-B ETSI EN 300 706 V1.2.1 (2003-04) OP47-SDP S2031M
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### Miscellaneous

Weight	Approx. 250g
Operating Temperature	0 °C to +50 °C
Dimensions	137 x 296 x 20 mm (HxWxD)

### Electrical

Voltage	+24V to +30V
Power	<9 Watts