

The HFS-4000 is an 3GHD/SD-SDI digital video frame sync which is used in i-MOD series frames. The HFS-4000 frame synchronizer accepts an 3G/HD/SD-SDI, one reference video stream, and provides four synchronized 3G/HD/SD-SDI outputs. 3G/HD/SD-SDI output signals support horizontal & vertical phase adjustment and automatic alignment. The HFS-4000 frame synchronizer provides automatic cable equalization for up to 984 ft (300 m) (SD-SDI)/328 ft (100 m) (HD-SDI) of Belden 1694A or equivalent cables.

Signal presence indication and parameters manual adjustment are provided via LED indicators, selector and paddle switches located on the module edge. 1RU and 2RU back modules are provided for the HFS-4000 modules when installed in 1RU and 2RU frames, respectively.

The HFS-4000 HD digital video frame synchronizer supports i-MOD platform network monitoring system. Parameters manual adjustment, module operating status and signal status indication are provided via SQ-Master control software.

FEATURES

- One 3G/HD/SD-SDI input signal
- SMPTE 259M, SMPTE 272M, SMPTE 292M and SMPTE 424M standard
- Freeze output
- Synchronizes 1 3G/HD/SD-SDI video stream and 1 fiber input, stores up to four HD digital video streams
- H & V phase synchronous adjustment
- Horizontal adjustment by one pixel steps, by ± 1 line ranges
- Vertical adjustment by one line steps, by ± 1 frame ranges
- Automatic alignment for outputs
- HD/SD-SDI outputs synchronized to REF signal
- Four HD/SD-SDI output signal 1 fiber output signal
- Cable EQ up to 984 ft (300 m) (SD-SDI)/656 ft (200 m) (HD-SDI)/328 ft (100 m) (3G-SDI)
- Stores settings in non-volatile memory
- Hot-swappable
- Computer control supported

SPECIFICATIONS

Specifications are subject to change without notice.

DIGITAL VIDEO INPUT

Signal Format	
SD-SDI.....	625i 50Hz 525i 59.94Hz
HD-SDI.....	720p 60Hz,59.94Hz,30Hz,29.97Hz,25Hz 1080p,30Hz,29.97Hz,25Hz,23.98Hz
3G-SDI.....	1080i 60Hz ,59.94Hz,50Hz
Signal Standard.....	SMPTE 259,SMPTE 272,SMPTE 292, SMPTE 424
Connector.....	BNC (x1)
Impedance.....	75 ohms
Return Loss.....	SD > 18 dB @ 270 MHz HD > 15 dB @ 1.485 GHz
Cable EQ.....	SD <300 m; HD < 200 m; 3Gbps<100m (Belden 1694A or equivalent cables)

REF VIDEO INPUT

Signal Format.....	Bi-level or Tri-level
Connector.....	BNCx2, hi-z loop-through

FIBER INPUT

Connector.....	LC
Signal Format.....	1080P/50,1080P/59.94,1080P/60; 1080I/50,1080I/59.94,1080I/60; 720P/23.98,720P/24, 720P/25,720P/29.97,720P/30, 720P/50,720P/59.94,720P/60; 1080P/25,1080P/29.97,1080P/30; 525i/59.94,625i/50
Signal Standard.....	SMPTE 259M, SMPTE 272M, SMPTE 292M , SMPTE 424M

FIBER OUTPUT

Connector.....	LC
Signal Format.....	1080P/50,1080P/59.94,1080P/60; 1080I/50,1080I/59.94,1080I/60; 720P/23.98,720P/24, 720P/25,720P/29.97,720P/30, 720P/50,720P/59.94,720P/60; 1080P/25,1080P/29.97,1080P/30; 525i/59.94,625i/50

Signal Standard.....	SMPTE 259M, SMPTE 272M, SMPTE 292M , SMPTE 424M
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DIGITAL VIDEO OUTPUT

Signal Format	
SD-SDI.....	625i 50Hz 525i 59.94Hz
HD-SDI.....	720p 60Hz,59.94Hz,30Hz,29.97Hz,25Hz 1080p,30Hz,29.97Hz,25Hz,23.98Hz 1080i 60Hz ,59.94Hz,50Hz
3G-SDI.....	1080i 60Hz ,59Hz,50Hz
Signal Standard.....	SMPTE 259,SMPTE 272,SMPTE 292
Impedance.....	75 ohms
Return Loss.....	SD > 18 dB @ 270 MHz; HD > 15 dB @ 1.485 GHz
Amplitude.....	800 mVp-p $\pm 10\%$
Rise/Fall Time.....	400 ~ 700 ps, 20% ~ 80% of amplitude
Alignment Jitter.....	100kHz ~ 300MHz 3Gbps< 0.3 UI HD/SD< 0.2 UI
Timing Jitter.....	10Hz 3Gbps: < 2.0 UI HD < 1.0 UI(10 Hz) SD < 0.2 UI
Rise/Fall Time.....	SD:400~1500ps; HD: <270 ps (20% ~ 80% of amplitude)
Overshoot.....	<10% amplitude
H Adjustment Precision.....	$\pm 1/2H$
V Adjustment Precision.....	$\pm 1/2F$

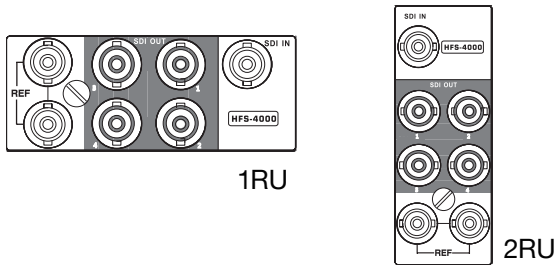
ELECTRICAL

Power.....	7 W
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ENVIRONMENTAL

Operating Temperature.....	32° ~ 104° F (0° ~ 40° C)
Relative Humidity.....	10% ~ 90%

BACK MODULES



BLOCK DIAGRAM

