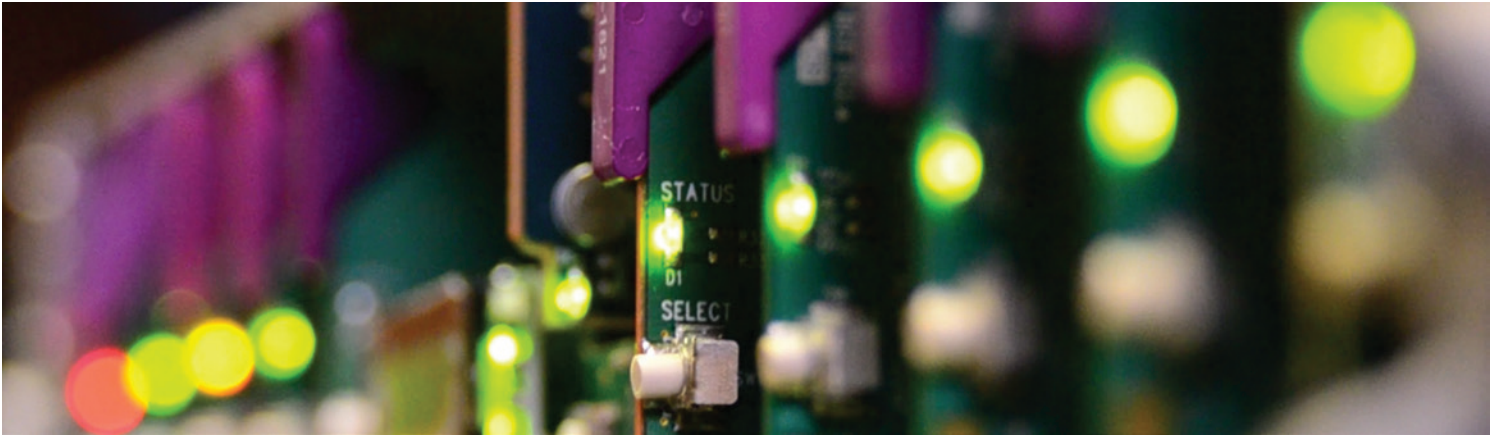


# FRS-1801

HD/SD Frame Synchronizer



Space-saving, modular platform for advanced signal processing.

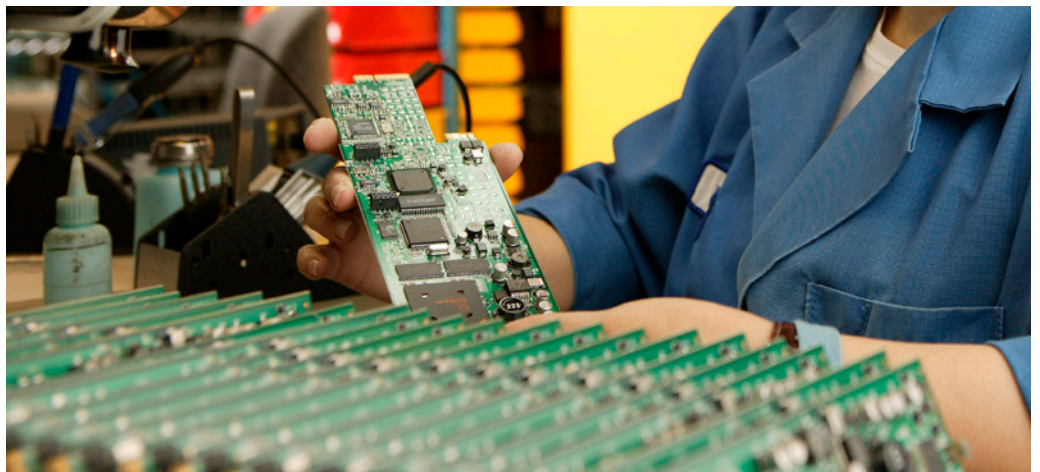
The FRS-1801 from Grass Valley, a Belden Brand, is a highly integrated module which offers frame synchronization, and video processing, including color correction and delay, for HD and SD signals in HD/SD hybrid plants. A processing delay of up to 1.3 seconds is available for Dolby E and AC3 encoders/decoders.

With the audio processing option, the card can process up to 16 channels (four groups) of embedded audio or eight channels (two groups) of discrete AES inputs/outputs. The FRS-1801 can offer shuffling and downmixing, and provides four AES inputs and four AES outputs.

The FRS-1801 can also be associated with a Grass Valley audio processor modules, such as the UAP and DAP, for more advanced audio requirements, such as analog audio processing or Dolby E decoding.

Advanced monitoring and control features include thumbnail and audio level meter (ALM) generation, as well as an optional waveform/vectorscope over IP of the output signal, which allows the operator to control and see the changes made to the signal.

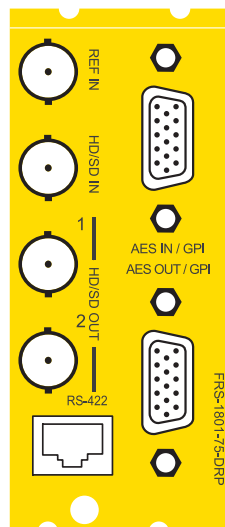
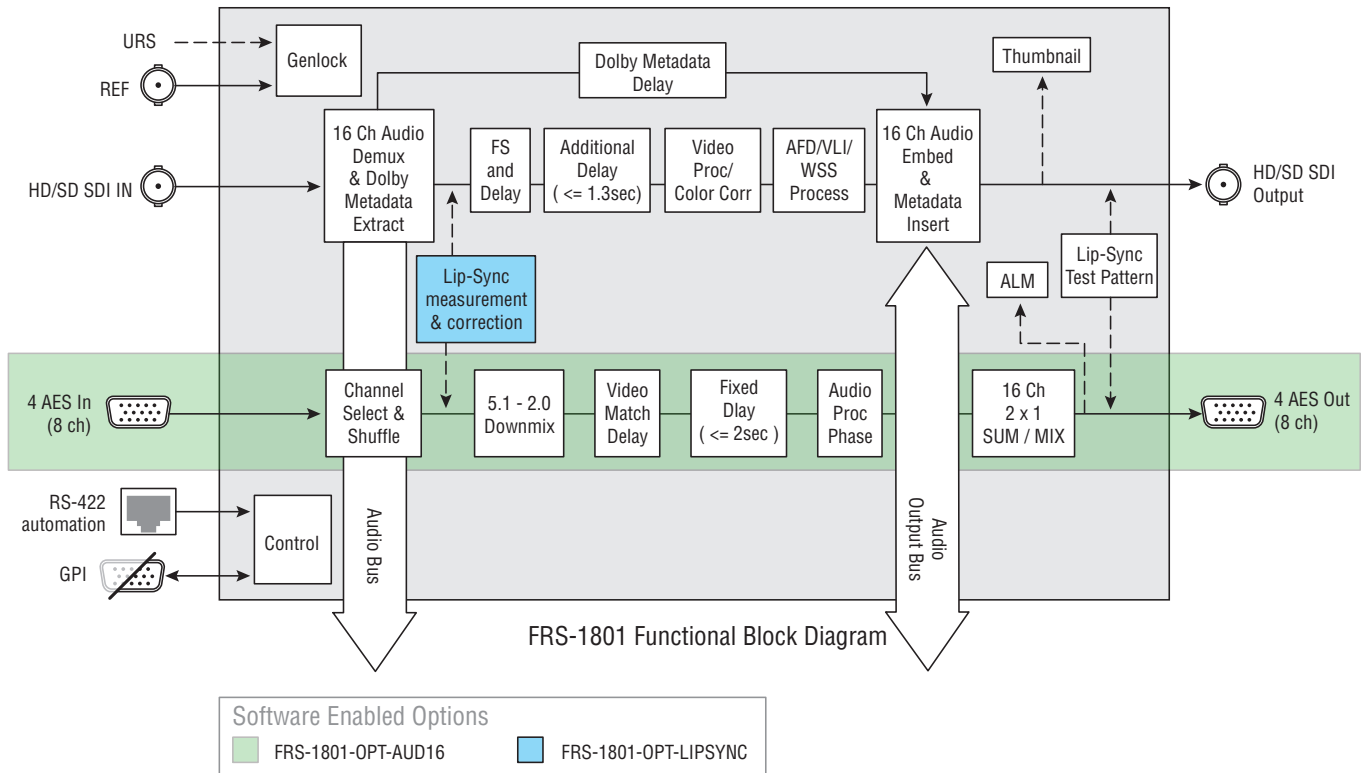
With the Out-of-Service lip-sync measurement and correction option, broadcasters can measure and correct lip-sync problems within their facilities.



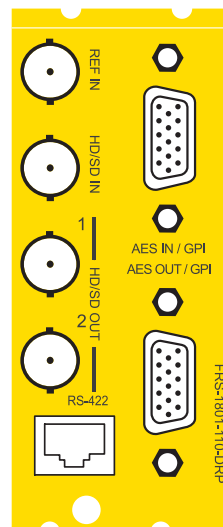
# FRS-1801 HD/SD Frame Synchronizer

## KEY FEATURES

- HD/SD frame synchronizer, delay and line sync
- Video delay up to 1.3 seconds
- Video proc and color correction
- 16 channels of embedded audio processing
- Out-of-Service lip sync measurement and correction option
  - Able to detect the AV delay using the lip sync test pattern
  - Able to correct automatically or manually the AV delay that is offset by up to 1.3 seconds in HD
  - Supports both embedded audio and AES/EBU audio I/O
- AFD insert
- Downmixing from 5.1 to 2.0
- Flexible HD/SD reference input
- Perfect audio/video synchronization with adjustable fixed delay
- Processes and delays ancillary data such as CC , timecode and audio metadata (SMPTE 2020-A)
- Compatible with Grass Valley audio processing cards
- Thumbnail and audio level meter (ALM) generation



FRS-1801-75-DRP



FRS-1801-110-DRP

# FRS-1801 HD/SD Frame Synchronizer

## SPECIFICATIONS

### Video Input

#### Signal:

SD: SMPTE-259M-C (270 Mb/s)  
 HD: SMPTE-292M (1.485, 1.485/1.001 Gb/s)

#### Supported formats:

SD: SMPTE-125M: 480i59.94  
 SD: EBU: 576i50

HD: SMPTE-274M: 1080i59.94, 1080i50  
 HD: SMPTE-296M: 720p59.94, 720p50

**Embedded audio:** SMPTE-299M, SMPTE-272

#### Cable length:

350m (1,148 ft.) Belden 1694A at 270 Mb/s  
 150m (492 ft.) Belden 1694A at 1.485 Gb/s

**Return loss:** >15 dB up to 1.5 GHz

### Video Output

#### Signal:

SMPTE-259M-C (270 Mb/s)  
 SMPTE-292M (1.485, 1.485/1.001 Gb/s)

#### Supported formats:

SD: 480i59.94, 576i50  
 HD: SMPTE-274M: 1080i59.94, 1080i50  
 HD: SMPTE-296M: 720p59.94, 720p50

**Embedded audio:** SMPTE-299M, SMPTE-272

**Return loss:** >15 dB up to 1.5 GHz

**Jitter:** HD/SD: <0.2 UI

### Reference Input

#### Signal:

SMPTE 170M/SMPTE 318M/TU 624-4/BUT  
 470-6 or blackburst  
 SMPTE 274M / SMPTE 296M tri-level sync  
 (black)

**Return loss:** >35 dB up to 5.75 MHz

### Video Processing Performance

**Signal path:** 10 bits

**Latency:** 3 lines minimum

**Additional video delay:** 1.3s maximum (HD/SD)

### Audio Digital Inputs(4)

**Sampling freq.:** 32 to 96 kHz

**Quantization:** 16 to 24

#### Inputs

AES3

Level: 0.2 to 7 Vp-p  
 Impedance: 110Ω balanced

AES3-id

Level: 0.2 to 7 Vp-p  
 Impedance: 75Ω  
 Return loss: 25 dB at 6 MHz

### Outputs

AES3

Level: 4 Vp-p  
 Impedance: 110Ω balanced

AES3-id

Level: 1 Vp-p  
 Impedance: 75Ω  
 Return loss: 15 dB at 6 MHz

### Audio Processing Performance

**Quantization:** 20-24 bits

**Sampling:** 48 kHz, synchronous

**Number of channels:** 16 (4 groups)

**Freq. response:** ±0.02 dB (20 Hz to 20 kHz)

**SNR:** 123 dB (A weighted)

**THD+N:** -138 dB (20 Hz to 20 kHz)

### Miscellaneous

#### Signal Presence

**Threshold:** From -72 to -48 dBFS (6 dB steps)

**Silence detection delay:** From 0 to 255s

**Fixed delay:** 0 to 2.0s

**Step:** 1 ms (coarse), 1 sample (fine)

### GPI (8)

**Connector:** 15-pin D-Sub

**GPI in:** Input selection: 1 or 2

**Presets:** 1, 2, 3, 4

**GPI out:** Provides status of selected input: 1 or 2

### RS-232/422

**Connector:** RJ-69 (RJ45 10 contact)

### Abus Connector

As per ABUS standard, Grass Valley

### Test Pattern Generator

**Video:** Color bars - 100% white bar with 75% color

**Audio:** Left channel pulsed 1 kHz / Right channel steady 1 kHz tone

### Electrical

**Power:** 10W



## ORDERING

### Densité 2 frame

FRS-1801  
 FRS-1801-75-DRP  
 FRS-1801-110-DRP

### Densité 3 frame

FRS-1801-3RU  
 FRS-1801-75-DRP-3RU  
 FRS-1801-110-DRP-3RU

### Description

HD/SD frame synchronizer  
 Double rear connector panel, 75 ohm  
 Double rear connector panel, 110 ohm

### Options

FRS-1801-OPT-AUD16  
 FRS-1801-OPT-LIPSYNC  
 BOC-DE15-4BNC-1

### Description

16 channel on-board audio processing option  
 Out-of-Service lip sync measurement and correction option  
 75 ohm digital audio breakout cable

### Related products

AAP-1741  
 UAP-1783  
 DAP-1781

4-channel analog audio processor  
 8-channel universal audio processor  
 8-channel digital audio processor

### Remote control

iControl, iControl Solo, RCP-200



GVB-1-0379A-EN-DS

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