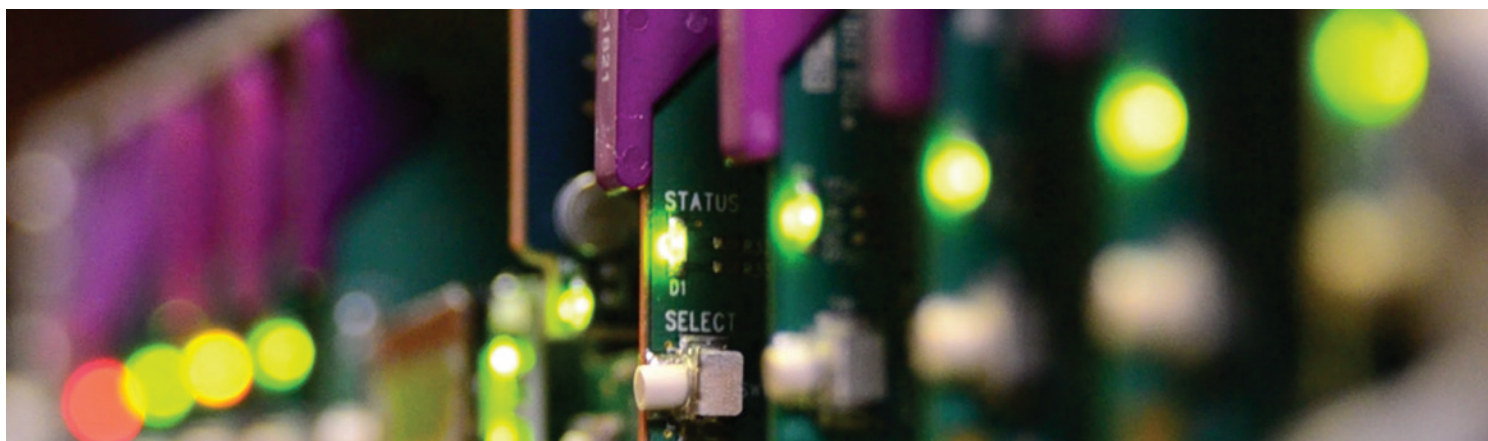


MAP-3901

3G/HD/SD Metadata and Embedded Audio Processor



Sophisticated audio signal processing on a single Densité 3/Densité 3+ FR1 module.

The MAP-3901 from Grass Valley, a Belden Brand, is the latest generation metadata and audio processor in the Densité family, offering sophisticated audio signal processing on a single 3 RU module. The powerful and versatile processing platform delivers significant value by simultaneously processing up to 56 channels of audio (16 channels of embedded audio from the video, plus others generated internally). Functions include dual downmixing, level control, channel shuffling/mixing and an on-board DSP engine that can run simultaneously with up to two optional Dolby-E decoders, four optional Dolby Digital & Digital Plus encoders, and two optional upmixers (2.0 to 5.1).

The card will pass and delay automatically all 56 internal audio channels to preserve lip sync between audio and video. Each channel can be delayed independently to correct any lip sync issues. All audio channels can be mixed and shuffled to provide 16 channels for embedding in the video output.

The card can be genlocked to an external reference or to the frame reference using the internal URS signal.

The card has a frame buffer (not a frame sync) which allows an increase in the video delay of up to 4.1 seconds in HD to compensate for the long audio processing delay required by some audio processing functions or for effective processing of incoming feeds — especially where there is a mix of short and long delay feeds, as is often the case when managing large live events.

Four audio metadata insertions in the VANC are possible from multiple sources, such as Dolby E decoders, embedded VANC streams or from the integrated metadata generators. All parameters in the metadata streams can be probed and monitored. Audio metadata (SMPTE 2020 method A or B) can be used to steer the behavior of the audio downmixers and the Dolby encoders.

The MAP-3901 has eight GPIOs that can be used as input or output for loading user presets.

The MAP-3901-3DRP-R, MAP-3901-3DRP-F-R and MAP-3901-3+SRP-R-D rear modules all have a bypass relay that can be used to bypass the main input to the output if the card fails, loses power or if the card is removed.

The MAP-3901-3DRP-F-R rear module has a fiber input/output cartridge. Once the SFP cartridge*1 is installed, the inputs or outputs are selectable through the control interface. The input of the card allows you to select between fiber and copper inputs. The outputs are via copper and fiber simultaneously (with appropriate fiber cartridge).

Up to 10 MAP-3901 processors can be housed in the Densité 3 (3 RU) frame, and up to 4 MAP-3901 processors can be housed in the Densité 3+ FR1 (1 RU) for even greater space efficiency.

To broadcasters, the MAP-3901 means that the new generation of audio processing requirements can be achieved on a single module, while minimizing a facility's environmental footprint and improving scalability, flexibility and reliability.

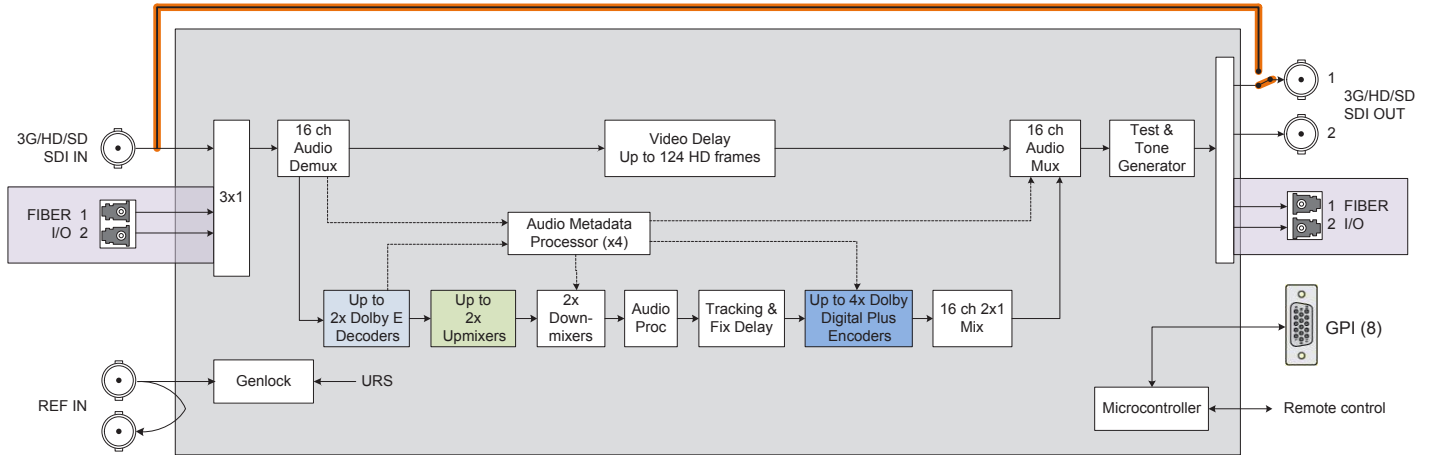
*1 SFP Plug-in Cartridges will be supported at a later date with a firmware update.

MAP-3901 3G/HD/SD Metadata and Embedded Audio Processor

KEY FEATURES

- Video**
 - 3G/HD/SD input
 - Supports 3 Gb/s level A (mapping 1) and level B
 - Flexible SD/URS reference input
 - Programmable audio/video delay of up to 4.1 seconds (124 frames) in HD
 - Bypass relay with MAP-3901-3DRP-R, MAP-3901-3DRP-F-R and MAP-3901-3+SRP-R-D rear modules
 - Optional optical fiber I/O*1 module with MAP-3901-3DRP-F-R rear module
- Metadata**
 - Four audio metadata insertion and extraction (SMPTE 2020 Method A or B)
- Audio**
 - Full audio shuffling and mixing per channel basis
 - 56 channels internal audio processing
 - 2 audio 5.1 surround downmix to Lt/Rt or Lo/Ro
 - Audio delay adjustments of up to 2 seconds to compensate for lip sync
 - Up to 2 optional Dolby E decoders
 - Up to 2 optional stereo to 5.1 upmixers
 - Up to 4 optional Dolby Digital and Digital Plus Encoders

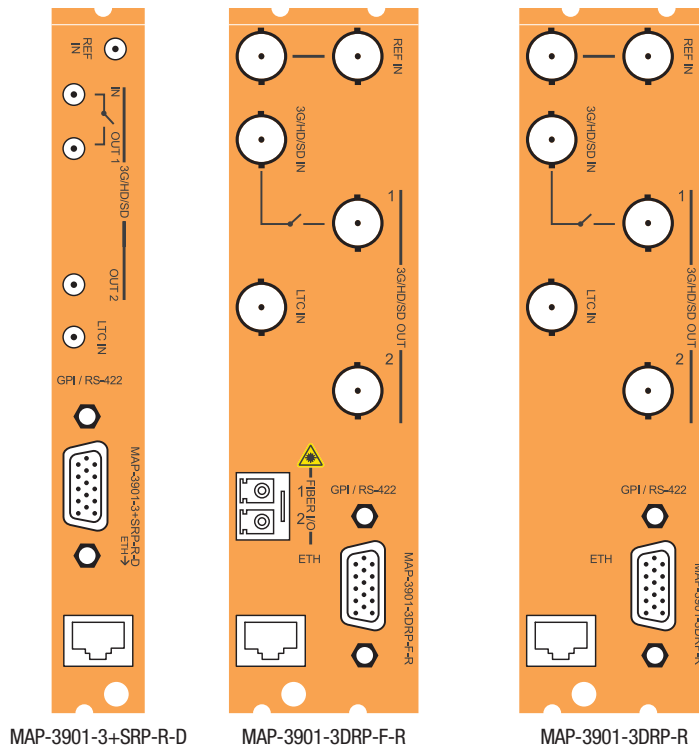
*1 SFP Plug-in Cartridges will be supported at a later date with a firmware update.



MAP-3901 Functional Block Diagram

Options (hardware and software)

- With -R Rear Modules
- With appropriate SFP cartridge and -F rear Modules
- MAP-3901-OPT-DED
- MAP-3901-OPT-UPMIX
- MAP-3901-OPT-DDE



MAP-3901 3G/HD/SD Metadata and Embedded Audio Processor

SPECIFICATIONS

Video Input/Output

Signal (1):

SMPTE-259M-C (270 Mb/s)
 SMPTE-292M (1.485, 1.485/1.001 Gb/s)
 SMPTE-424M (2.970, 2.970/1.001 Gb/s)

Supported formats:

SD: 480i59.94, 576i50
 HD: SMPTE-274M: 1080i59.94, 1080i50
 HD: SMPTE-296M: 720p59.94, 720p50
 3G: SMPTE-425M level A (mapping 1), level B: 1080p59.94, 1080p50 (dual link)

Cable length*2:

325m (1,066 ft.) Belden 1694A at 270 Mb/s
 180m (590 ft.) Belden 1694A at 1.485 Gb/s
 90m (295 ft.) Belden 1694A at 2.970 Gb/s

Return loss:

OUT 1: > 8 dB up to 3 GHz
 OUT 2: > 15 dB up to 1.5 GHz
 > 10 dB at 3 GHz

Jitter:

HD/SD: <0.2 UI (alignment jitter)
 3G: <0.4 UI (alignment jitter)

Reference Input

Signal:

SMPTE 170M/SMPTE 318M/ITU 624-4 blackburst
 SMPTE 274M / SMPTE 296M tri-level sync

Return loss: >27 dB up to 5.75 MHz

LTC

Not used

GPIO

Signal (8): Opto-isolated, common ground

Direction: Bidirectional

Connector: DE15

RS-422/ETH

Not used

Video Processing Performance

Signal path: 10 bits minimum

Processing delay: 1 interlaced frame (33 ms @59.94 Hz or 40 ms @50 Hz)

Additional delay: (HD) Up to 4.1 seconds frames upon user selection

Audio Processing Performance

Quantization: 24 bits

Sampling: 48 kHz, synchronous

Number of channels: 56

Frequency response: ±0.02 dB (20 Hz to 20 kHz)

SNR: 123 dB (A weighted)

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

Audio latency: Delay depending on processing options

Audio delay: Up to 2s (1 ms steps) in addition to programmed video delay

Electrical

Power: 25W max.

*2 Cable length will be reduced when using the output protected by the bypass relay on rears MAP-3901-3DRP-R, MAP-3901-3DRP-F-R and MAP-3901-3+SRP-R-D.

ORDERING

Densité 3 frame

MAP-3901
 MAP-3901-3DRP-R
 MAP-3901-3DRP-F-R
 MAP-3901-3+SRP-R-D

Description

3G/HD/SD metadata and embedded audio processor
 Double Rear panel with BNC and bypass relay
 Double Rear panel with BNC, fiber connector and bypass relay
 Single Rear panel with Din and bypass relay for Densité 3+ frame

Options (Software)

MAP-3901-OPT-DED-1
 MAP-3901-OPT-DED-2
 MAP-3901-OPT-DDE-1
 MAP-3901-OPT-DDE-2
 MAP-3901-OPT-DDE-3
 MAP-3901-OPT-DDE-4
 MAP-3901-OPT-UPMIX-1
 MAP-3901-OPT-UPMIX-2

Description

Single Dolby E decoding option
 Dual Dolby E decoding option
 Single Dolby Digital Plus encoding option
 Dual Dolby Digital Plus encoding option
 Triple Dolby Digital Plus encoding option
 Quadruple Dolby Digital Plus encoding option
 Single Stereo to 5.1 Surround upmix option
 Dual Stereo to 5.1 Surround upmix option

Remote control

iControl, iControl Solo



GVB-1-0497B-EN-DS

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