APM6803+RLYT

Multichannel Advanced Audio Processor with Relay Bypass

APM6803+RLYT Advanced Audio category Multichannel Audio Processing Station The APM6803+RLYT is a multichannel audio processing module for managing loudness and surround sound audio streams. Featuring DTS Neural Surround™ UpMix, DownMix and MultiMerge and DTS Neural Loudness Control, the APM6803+ delivers unparalleled audio processing capabilities; with loudness management processing that delivers a natural, open quality not found in traditional multiband compression technology. Flexible user-defined workflows and intelligent metadata handling ensure that the right processing is applied at the right time, allowing broadcasters to meet regulations while preserving the artistic integrity of the content.
The APM6803+RLYT is an audio processing system on a card and can be configured to support a wide variety of multichannel applications. Dual Dolby® encoders and decoders can be enabled, allowing the APM6803+RLYT to interface to virtually any type of signal. The APM6803+RLYT also boast a feature-rich audio/video frame synchronizer with mono channel routing for embedding and de-embedding. With eight discrete AES inputs and eight discrete AES outputs, the APM6803+RLYT enables any combination of AES and embedded SDI audio input and output to be easily achieved. Imagine products for real time loudness control using DTS Neural Loudness Control technology provides signal handling for all worldwide recommendations for loudness measurement.

Features

- 3G/HD/SD-SDI input and output capability
- SD/HD compliant SDI bypass relay
- Eight AES inputs and eight AES outputs
- Virtual audio stream interface for simplified configuration and control
- Multichannel audio system supporting up to 4 independent output streams
- Dual Dolby encoders and decoders (Dolby Digital and Dolby E)
- DTS Neural Loudness Control on each output stream
- Dual Surround Sound processors for implementing DTS Neural Surround™ UpMix, DownMix and MultiMerge
- Surround Field Protection using DTS Neural Surround™ MultiMerge ensures smooth, consistent Surround Sound output, while input switches between stereo and surround sound sources
- Dynamic DTS license allocation
- Two individual metadata generators
- Intelligent metadata processing
- Dialnorm Translator
- Each output individually configurable for EAS (Emergency Alert System) override
- Each input individually configurable for Voice Over mixing
- Full-featured frame sync technology
- Automatic audio/video delay alignment for consistent lip synchronization
- Automation control for dynamic on-air changes to loudness control profile
- Seamless sound maintains AES embedded audio on loss of SDI input
- Q-SEE™-compliant thumbnails and alarms
- Custom Surround Sound and Loudness Control Presets
- Custom GPI and parameter scripting support

Specifications

Inputs

SDI Video Input

ITEM	3G HD-SD SPECIFICATION (APPLICABLE WITH STANDARD BACK MODULE ONLY)	1.5G HD-SDI SPECIFICATION (APPLICABLE WITH STANDARD AND RELAY BACK MODULES)	SD-SDI SPECIFICATION (APPLICABLE WITH STANDARD AND RELAY BACK MODULES)
Number	1	1	1
Standard	1080p (SMPTE 424M) 1080p DL (SMPTE 372M)	· 1080i/p (SMPTE 274M) · 720p (SMPTE 296M)	SMPTE 259M-C, 270 Mbps, 525/625 component
Connector	BNC (IEC169-8)	BNC (IEC169-8)	BNC (IEC169-8)
Impedance	75W	75W	75W
Frame rate	1080p: 50, 59.94, 60 Hz	· 1080p: 23.98, 24, 25, 29.97, 30 Hz · 1080psf: 23.98, 24 Hz · 1080i: 50, 59.94, 60 Hz · 720p: 50, 59.94, 60 Hz	· 525: 59.94 Hz · 625: 50 Hz
Return loss	· > 15 dB from 5 MHz to 1485 MHz · >10dB from 1485 MHz to 2970 MHz	> 15 dB from 5 MHz to 1485 MHz	> 15 dB up to 270 MHz
Equalization	Adaptive cable equalization for up to 459 ft (140 m) (typical) of Belden 1694A coaxial cable	With standard back module: Adaptive cable equalization for up to 656 ft (200 m) (typical) of Belden 1694A coaxial cable With relay back module: Adaptive cable equalization for up to 262.4 ft (80 m) (typical) of Belden 1694A coaxial cable.	With standard back module: Adaptive cable equalization for up to 984 ft (300 m) (typical) of Belden 8281 coaxial cable With relay back module: Adaptive cable equalization for up to 820 ft (250 m) (typical) of Belden of Belden 8281 coaxial cable, 1312 ft (400 m) (typical) of Belden 1694A coaxial cable.

AES/DARS Input

ITEM	BALANCED/DARS SPECIFICATION	UNBALANCED/DARS SPECIFICATION
Standard	AES 3	AES 3, SMPTE 276M
Connector	44-pin connector; or 3-pin connector, female XLR with external balun	BNC (IEC 169-8)
Sensitivity	<200 mV	<100 mV
Impedance	110W ± 20% (0.1 to 6 MHz)	75W
Return loss	N/A	> 25 dB, 0.1 to 6 MHz
Common mode rejection	0 V to 7 V (0 kHz to 20 kHz)	N/A
Input audio rate	32 kHz to 108 kHz (DARS 48 kHz only)	32 kHz to 108 kHz (DARS 48 kHz only)
Maximum input signal	10 V pk-to-pk	n/a
Bits	16, 20, or 24	16, 20, or 24
Channel status and user bit	Maintained, but professional mode, 48 kHz.	

Note: Ensure that DARS input is locked with genlock.

Outputs

SDI Video Output

ITEM	3G HD-SDI SPECIFICATION (APPLICABLE WITH STANDARD BACK MODULE ONLY)	1.5G HD-SDI SPECIFICATION (APPLICABLE WITH STANDARD AND RELAY BACK MODULES)	SD-SDI SPECIFICATION (APPLICABLE WITH STANDARD AND RELAY BACK MODULES)
Number	4 synchronized	4 synchronized	4 synchronized
Standard	1080p (SMPTE 424M) 1080p DL (SMPTE 372M)	· 1080i (SMPTE 274M) · 720p (SMPTE 296M) SMPTE 292M with SMPTE 299M embedded audio	SMPTE 259M-C, 270 Mb/s, 525/625 component
Frame rate	1080p: 50, 59.94, 60 Hz	· 1080i: 50, 59.94, 60 · 1080p: 23.98 (p/psf), 24 (p/psf), 25, 29.97, 30 Hz · 720p: 50, 59.94, 60 Hz	525, 625
Connector	BNC (IEC169-8)	BNC (IEC 169-8)	BNC (IEC 169-8)
Impedance	75W	75W	75W
Return loss	· > 15 dB from 5 MHz to 1485 MHz · >10 dB from 1485 MHz to 2970 MHz	> 15 dB from 5 MHz to 1485 MHz	> 15 dB up to 270 MHz
Signal level	800 mV ± 10%	800 mV ± 10%	800 mV ± 10%
D.C. offset	0.0 V ± 0.5 V	0.0 V ± 0.5 V	0.0 V ± 0.5 V
Rise and fall time	< 135 ps	< 270 ps, within 100 ps of each other	0.4–1.5 ns
Overshoot	< 10% of amplitude	< 10% of amplitude	< 10% of amplitude
Jitter	· >100kHz: < 0.3 UI (101 ps) pk-to-pk · >10 Hz: < 2.0 UI (675 ps) pk-to-pk	· >100 kHz: < 0.2 UI (135 ps) pk-to-pk· >10 Hz: < 1 UI (675 ps) pk-to-pk	< 0.2 UI (740 ps) pk-to-pk

AES Audio Outputs

ITEM	BALANCED SPECIFICATION	UNBALANCED SPECIFICATION
Standard	AES 3	AES 3, SMPTE 276M
Type	Balanced, transformer coupled	Unbalanced, AC coupled
Connector	44-pin connector; or 3-pin male XLR with external balun	BNC (IEC169-8)
Impedance	110W ± 20% (0.1 to 6 MHz)	75W
Return loss	N/A	> 25 dB, 0.1 to 6 MHz
Signal amplitude	2 to 7 V pk-to-pk into 110 W load	1.0 V pk-to-pk ±10% into 75W load
Audio rate	48 kHz	48 kHz
Jitter	± 20 ns	± 20 ns
Rise/fall time	5 ns to 30 ns (10% to 90%)	30 ns to 44 ns (10% to 90%)
Bits	24, 20, or 16	24, 20, or 16
Channel status and user bits	Maintained, but professional mode, 48 kHz	

Reference Video

ITEM	SPECIFICATION
Level	1 V pk-to-pk +6 dB/-3.5 dB
Signal type	Analog composite 525/625 or tri-level sync (1080i/p/720p)
Connector	BNC per IEC 169-8

ITEM	SPECIFICATION
Impedance	75W
Return loss	> 40 dB up to 10 MHz (typical)

GPI I/O

ITEM	SPECIFICATION
Inputs	
Number of Inputs	12
Connector	SAMTEC mini mate header
Trigger Action	Low, High, Rising Edge, Falling Edge, Active High, Active Low
Internal Pull-Up	+5 V
Baud Rate	< 10 Kbps
Outputs	
Number of Outputs	6
Signal Standard	TTL Active low or high
Connector	SAMTEC mini mate header
Baud Rate	< 10 Kbps

Serial Ports

Two serial ports are integrated into a single SAMTEC mini-mate header and allow encoding dialnorm and other metadata.

ITEM	SPECIFICATION
Number of Channels	2
Standard	EIA/TIA-232, EIA/TIA-422, selectable
Connector	SAMTEC Mini-mate header
Baud Rate	115.2 Kbps

EIA/TIA-232-E

ITEM	SPECIFICATION
Maximum Output Level (unloaded)	< ±25 V
Output Level (loaded)	±5 V to ±15 V
Driver Load Impedance	3kW to 7kW
Slew Rate	< 30 V/ s
Max Driver Current in High-Z	±6 mA @ ±2 V
Receiver Impedance	3 kW to 7 kW
Receiver Sensitivity	±3 V
Receiver Input Voltage Range	±15 V

EIA/TIA-422y

ITEM	SPECIFICATION
INPUT TERMINATION	**120W, JUMPER SELECTABLE**
MAXIMUM OUTPUT LEVEL (UNLOADED)	**< ±6 V**
OUTPUT LEVEL (LOADED)	**> ±2.0 V**
DRIVER LOAD IMPEDANCE	**50W**

MAX DRIVER CURRENT IN HIGH-Z	**±100 A**
RECEIVER IMPEDANCE	**4 K W**
RECEIVER SENSITIVITY	**±200 MV**
RECEIVER INPUT VOLTAGE RANGE	**-7 V TO +7 V**

Video Delay

VIDEO STANDARD FORMAT	PROPAGATION DELAY (MS)
525	43.9 µs
625	43.8 µs
1080i /59.94 /50	9.42 µs
720p /59.94 /50	9.42 µs
1080p/59.94 /50	4.79 µs

Audio Propagation Delay

AES SAMPLING RATE	PCM	NON-PCM
32 kHz	4.2 ms	0.3 ms
48 kHz	3.7 ms	0.7 ms
96 kHz	3.1 ms	1.2 ms

Licensing

DTS Licensing
DTS licenses enable a wide variety of DTS Neural audio processing options such as Loudness Control, UpMix, DownMix, and MultiMerge. These options make it possible to offer advanced audio processing for high-definition and surround sound programming using 5.1 and stereo sources (2.0).
DTS Credits
The number of credits determines how many DTS functions are available. The following table provides the number of credits required for each DTS function.

FUNCTION	CREDITS REQUIRED
UpMix	3
DownMix	3
MultiMerge	4
Loudness Control (5.1)	3
Loudness Control 2.0 (2×1.0)	1
Loudness Control (5.1+2.0)	4
Loudness Control (4×2.0)	4

You can have a maximum of 16 credits. For example, a combination of UpMix, MultiMerge, and Loudness Control (5.1) will require 10 credits (3+4+3).
Credits are flexible. You can use available credits for different functions at different times. For instance, if you have 10 credits, you could use an **UpMix+MultiMerge+Loudness Control (5.1)** combination at one time and a **MultiMerge+Loudness Control (5.1)+Loudness Control (5.1)** combination at another time.
Dolby Licensing
The following types of Dolby licenses are available:

- Dolby E Encoder licenses
- Dolby E Decoder licenses
- Dolby Digital Encoder licenses
- Dolby Digital Decoder licenses

A maximum of 2 x Dolby Encoder and 2 x Dolby Decoder can be supported on a single APM6803+ module.

Software Key Ordering Information

DTS Licenses
To order licenses for DTS functions (UpMix, DownMix, MultiMerge, Loudness Control),

- Provide your existing Serial Number and License Key.

You can get this information by accessing your APM6803+ module in a web browser and going to **Parameters > General > Licensing**

- Quote the part number mentioned below and indicate how many credits you need. You can order a maximum of 16 credits.

PART NUMBER	DESCRIPTION
68OPT-DTS	Software Key Licenses for DTS Neural Technologies. · 3 required for UpMix or DownMix or 5.1 Loudness Control · 4 required for MultiMerge · 1 required for 2.0 Loudness Control

Dolby Licenses
To order licenses for Dolby functions:

- Provide your existing Serial Number and License Key.

You can get this information by accessing your APM6803+ module in a web browser and going to **Parameters > General > Licensing**

- Quote the relevant part number mentioned below and indicate how many licenses you need. You can order a maximum of 2 of each kind of Dolby license.

PART NUMBER	DESCRIPTION
68OPT-DEE	Software Key License for Dolby E Encoder.
68OPT-DED	Software Key License for Dolby E Decoder.
68OPT-DDE	Software Key License for Dolby Digital Encoder
68OPT-DDD	Software Key License for Dolby Digital Decoder

Images/Diagrams