

Appendix

Contents

Parameters, Units, and Ranges A-2

Parameters, Units, and Ranges

Approximately following the AM-10HD's signal path, these are the values and ranges appropriate to each type of processing.

System Level

Headroom:	20dB
Nominal Operating Level:	-20dBFS digital

Analog Line Input

Type:	Electronic Differential
Input Impedance:	> 10Kohm (bridging)
Optimum Source Impedance:	< 1Kohm

Digital Line Input

Data Standard:	AES3 (AES/EBU)
Data Amplitude:	Per AES3-2003 assuming minimum allowable output signal amplitude of 2V and minimum allowable input signal amplitude of 200mV

Input Gain Adjustment Ranges

Gain Adjustment:	+12dB/-36dB
Gain Adjustment Increments:	0.5dB
Gain Calibration:	A gain control setting of 0.0 aligns an external 0dBFS signal with the AM-10HD's 0dBFS internal reference

Input Failsafe

Type:	Automatic
Analog Fail Cause:	Audio level below -48dBFS.
Response Time:	30 seconds
Digital Fail Cause 1:	Audio level below -48dBFS
Response Time:	30 seconds
Digital Fail Cause 2:	Corrupted or invalid AES data
Response Time:	Immediate

Audio Level Balance

Type:	Common to Analog and Digital inputs
Analog/Digital L/R Balance Range:	+/-12dB
Analog/Digital L/R Balance Increments:	0.5dB

Voice Symmetry Phase Rotation

Operating Modes:	In/Out
Filter Type:	4 th Order Allpass

High-Pass Filter

HPF Filter Class:	24dB/octave Butterworth
Frequency range:	20Hz – 300Hz
HPF Insert Modes:	Off / Stereo L/R / Sum/Difference

Equalization - Two sections of four-band Parametric Equalization

EQ Set 1 – routable to pre or post-five-band AGC.

EQ Set 2 – post-AM multiband limiter.

Frequency:	20Hz – 20 kHz
Bandwidth:	0.2 – 3.0 octaves
Lift / Cut:	+/- 14.0dB pre/post five band AGC +/- 6.0dB post HD/AM multiband limiters

Five-Band AGC/Compressor

Operates in sum/difference, or ‘matrix’ mode with the gain linked at AGC time constants.

Drive Gain:	OFF or -79.0dB to +6.0dB in 0.5dB steps (1dB steps below -60dB)
Makeup Gain Range:	-20.0dB to +48.0dB, 0.5dB steps
AGC/Compressor Thresholds:	- 35dBFS to -65dBFS
AGC Threshold Backoff:	0dB to -12dB
AGC Attack:	50mS – 1500ms (1.5 sec)
AGC Release:	100mS – 7.0 seconds
AGC Band Coupling:	0dB to -30.0dB, 0.5dB steps
Compressor Attack:	3.0mS – 1000mS (1Sec)
Compressor Release:	20mS – 1000mS (1Sec)
Ratio:	1:1 – 20:1
AGC Threshold:	-20.0dB to -79dBFS, plus off
Gate Thresh Trim:	+/- 6dB per band
Gated Modes:	Ooze/Hold
Gate Delay:	50mS to 500mS

Crossover Frequencies

Super Low to Low Band:	40.5 Hz to 120 Hz
Low to Low Mid Band:	149 Hz to 334 Hz
Low Mid Band to High Mid Band:	817 Hz to 1.59 kHz
High Mid Band to High Band:	2.52 kHz to 5.99 kHz
Band Output Trims, Sum:	+/- 6dB
Band Output Trims, Difference:	+/- 6dB

HD Output Peak Limiter

A zero-overshoot look ahead peak limiter (or clipper for non-CODEC applications) accomplishes precision peak control for the AM-10HD's HD output.

Overall Controls	
Source:	Compressor, MB Limiter, VBMS
Bandwidth:	4kHz - 16kHz, 1kHz steps, or OFF (20kHz)
HF Protect:	3kHz - 16-kHz, behavior program controlled
Ceiling:	0dB - -48dB, 0.5dB steps
HyperMono:	Behavior program controlled
Lookahead Limiter Threshold Trim:	+/- 6.0dB
Lookahead Limiter Attack:	0.2ms – 100ms
Lookahead Limiter Release:	33ms – 330ms
Lookahead Limiter Delayed Release:	100ms – 1000ms (1Sec)
Clip Style:	Off/Round/Deep (for non-CODEC use)
HD Output Level Trim:	-36.00dB to +0dB
Phase:	L and R may be phase-reversed. L and R Channels may be swapped.
Output Signal available as:	AES 3-pin XLR (digital) Stereo Analog (pair 3-pin XLR connectors)

10-Band AM Output Peak Limiter

A four band parametric EQ follows the 10 band limiter and feeds the VBMS with multiple operating styles, then an oversampled, zero overshoot lookahead limiter or main clipper with multiple operating styles, and then an AM diversity delay.

Overall Controls	
Multiband/Drive:	0 – 100%
VBMS Drive:	+/- 10.0dB
VBMS Style:	Off/ Soft/ Hard
VBMS Output:	+/- 10.0dB
VBMS Frequency:	60 - 300Hz
Multiband Knee:	Soft/ Hard
Multiband Threshold:	+/-10dB relative to Drive
Multiband Attack:	0.1ms – 1000ms (1Sec)
Multiband Release:	30ms – 1000ms (1Sec)
Pre-emphasis Modes:	Off/MRSC
Pre-emphasis insert points:	Pre-MB Limiter Pre-lookahead limiter Post-lookahead limiter (pre-clipper)
Lookahead Limiter (Threshold) Trim:	+/- 6.0dB
Lookahead Limiter Attack:	0.2ms – 100ms
Lookahead Limiter Release:	33ms – 330ms
Lookahead Limiter Delayed Release:	100ms – 1000ms (1Sec)
Main AM Clipper Styles:	Off/Hard/Firm/Round
Output Signal available as:	Pre or post diversity delay AES 3-pin XLR (digital), and Stereo Analog (pair 3-pin XLR connectors)

AM Transmission Screen

Reference grade stereo encoder with embedded composite processing, test oscillator, SCA digitizer, and balanced and unbalanced composite outputs.

Overall Controls

Test Oscillator Frequency:	25Hz - 12kHz
Test Oscillator Level:	0-100% modulation
Tilt Test:	Clips test oscillator waveform at 50% amplitude
Bandwidth:	4.5kHz, 5kHz, 6kHz, 7.5kHz, 10kHz, Full (20kHz)
Output Modes:	Mono, Stereo, M/S
LF Tilt Correct Frequency:	5Hz -100Hz
LF Tilt Correct Q:	0.25 -3.00
LF Tilt Correct Level:	0.0 - +6.0dB, 0.5dB steps
HF Correction Frequency:	10kHz -20kHz
HF Correction Q:	0.25 -3.00
HF Correction Level:	0.0 - -6.0dB, 0.5dB steps

Analog Outputs

Analog 1 and/or Analog 2 Level:	-79.5dB - 0.0, plus Off (0.0=+24.0dBu peak)
Phase Reversal on all outputs	

Digital Output Level:	-35.5dBFS - 0.0dBFS, 0.1dB steps, plus OFF
DeEmphasis	Complementary to Pre-Emphasis
Output may be pre or post diversity delay	

Presets

An advanced preset management system allows the creation, storing, and recall of 80 presets within the AM-10HD itself and an unlimited number on a host PC. All signal-processing parameters are contained in these presets, allowing the preservation of the complete processing 'environment.' Optionally, Input and Output settings may be stored and recalled with presets.

Preset Encryption

Presets are encrypted using the AM-10HD internal 32 bit serial number as the encryption key.

Onboard Real-time clock

A highly accurate internal real-time clock allows the automatic recall of presets at pre-determined times. This clock may be set to 'free-run' or be synchronized to an external on- or off-site SNTP server, or synchronized to the GUI PC.