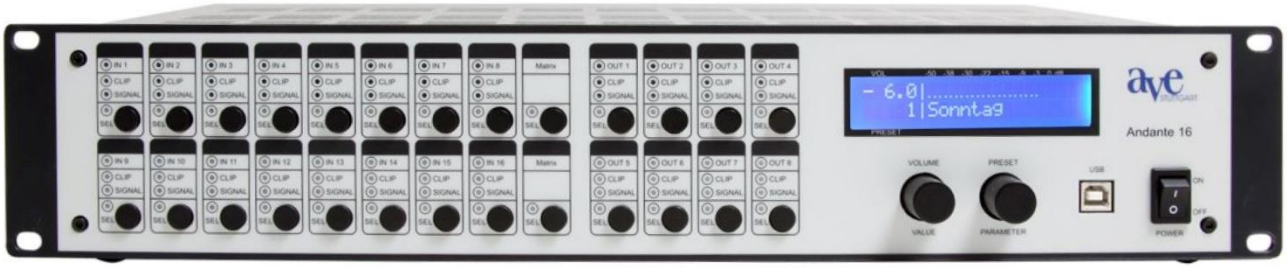
Digital Audio Mixer

Andante 16 – V2.0

Datasheet



1. Technical Specifications

Global Audio Performance	
Frequency response	20 Hz to 20 kHz, ±0.3 dB, +4 dBu output
Dynamic range	≥ 108 dBA, 20 Hz to 20 kHz, 0 dB gain
THD input to output	≤ 0.01%, all gain settings 0 dB
Total latency input to output	2,88 ms

Analog Input Section	
Number of balanced inputs	14 + 2 (XLR type connector)
Number of unbalanced inputs	2 (RCA type connector)
ADC Dynamic range	122 dB (“A” weighted)
Analog gain (digitally adjustable)	0 dB ÷ 60 dB, 0.5 dB steps
Nominal sensitivity (balanced input)	-84 dBu (38,8 μV_{rms})
Phantom power (digitally activated)	+48 VDC stabilized max 16 mA / channel
Balanced input impedance (XLR)	8 kΩ @ 1 kHz
Unbalanced input impedance (RCA)	14,7 kΩ @ 1 kHz
Maximum balanced input level	20,2 dBu (7,92 V_{rms})
Input protections	radio frequency interference (RFI) transient voltage spikes external overvoltage

Analog Output Section	
Number of balanced outputs	6 + 2 (XLR type connector)
Number of unbalanced outputs	2 (RCA type connector)
DAC Dynamic range	123 dB (“A” weighted)
Residual noise of output driver	-104,7 dBu (20 Hz ÷ 20 kHz)
Nominal level (balanced output)	0 dBu (0,77 V_{rms})

Maximum level (balanced output)	+16 dBu (4,88 V_{rms})
Output impedance	50 Ω typical
Output protections	short circuits radio frequency interference (RFI) transient voltage spikes external overvoltage
Analog to Digital Conversion	
Bit resolution	24-bit
Converter type	sigma delta with oversampling
Sampling frequency (Fs)	48 kHz
Signal to noise ratio (SNR)	111 dB (“A” weighted @ 48 kHz)
Dynamic range	111 dB (-60 dB_{FS})
Total harmonic distortion (THD)	-102 dB (1 kHz, -0,1 dB_{FS})
Oversampling factor	128 Fs
Digital Signal Processor	
DSP	SHARC ADSP21489-5B 32-bit / 40-bit, Floating-Point 450 MHz – 2,2 ns instruction cycle Super Harvard Architecture 2,7 GFLOPS, 5 Mbits SRAM
Digital to Analog Conversion	
Bit resolution	24-bit
Converter type	sigma delta with oversampling
Sampling frequency (Fs)	48 kHz
Signal to noise ratio (SNR)	123 dB (“A” weighted @ 48 kHz)
Dynamic range	123 dB (-60 dB_{FS})
Total harmonic distortion (THD)	0,0005%

Delay time	0,79 ms
Oversampling factor	64 Fs

Digital Processing		
Inputs Blocks (for each channel)		
Anti-Hum filter	Butterworth filter type with cutoff frequency at 160 Hz and slope -12 dB/ octave	
Lowpass / Highpass filter	Butterworth filter type, tuneable cutoff frequency, slope -12 or -24 dB/octave	
8-PEQs equalizer	Frequency Gain Bandwidth	20 Hz ÷ 20 kHz -15 dB ÷ 15 dB 0,014 ÷ 6,672 octave
Noise gate	Threshold Hold Time	-60 dB_{FS} ÷ 0 dB_{FS} 100 ms ÷ 10 s
Dynamic range compressor	Threshold Ratio Post Gain Attack Time Release Time	-90 dB_{FS} ÷ 20 dB_{FS} R=1:1 ÷ R=20:1 -20 dB ÷ 20 dB 1 ms ÷ 250 ms 10 ms ÷ 2500 ms
Multiband Dynamic range compressor	Crossover Output Level Thresholds Ratios Post Gains Attack Times Release Times	3 bands, 4^{th} order Linkwitz-Riley, tunable cutoff frequencies -20 dB ÷ 20 dB -90 dB_{FS} ÷ 20 dB_{FS} R=1:1 ÷ R=20:1 -20 dB ÷ 20 dB 1 ms ÷ 250 ms 10 ms ÷ 2500 ms
Automix function	Adaptive Threshold NOM Gain	

	Max opened channels	1 ÷ 16
	Hold Time	100 ms ÷ 5 s
	Attenuation	-60 dB ÷ 0 dB
	Priority	1 (low) ÷ 5 (high)
Fader level	-60 dB ÷ 10 dB, step 0,5 dB	

Input / Output Routing Matrix:	
Matrix size	16 In / 8 Out
Matrix cross point level adjusting	-60 dB ÷ 10 dB, step 0,5 dB

Output Blocks (for each channel)		
8-PEQs equalizer	Frequency	20 Hz ÷ 20 kHz
	Gain	-15 dB ÷ 15 dB
	Bandwidth	0,014 ÷ 6,672 octave
31-Bands graphic equalizer	Gain	-12 dB ÷ 12 dB
	Step	0,5 dB
Lowpass / Highpass filter	Butterworth filter type, tuneable cutoff frequency, slope -12 or -24 dB/Octave	
Noise gate	Threshold	-60 dB_{FS} ÷ 0 dB_{FS}
	Hold Time	100 ms ÷ 10 s
Dynamic range compressor	Threshold	-90 dB_{FS} ÷ 20 dB_{FS}
	Ratio	R=1:1 ÷ R=20:1
	Post Gain	-20 dB ÷ 20 dB
	Attack Time	1 ms ÷ 250 ms
	Release Time	10 ms ÷ 2500 ms
Multiband Dynamic range compressor	Crossover	3 bands, 4^{th} order Linkwitz-Riley, tunable cutoff frequencies
	Output Level	-20 dB ÷ 20 dB
	Thresholds	-90 dB_{FS} ÷ 20 dB_{FS}

	Ratios	R=1:1 ÷ R=20:1
	Post Gains	-20 dB ÷ 20 dB
	Attack Times	1 ms ÷ 250 ms
	Release Times	10 ms ÷ 2500 ms
Limiter	Threshold fixed at 0 dB_{FS}	
Automatic feedback suppressor	Up to 5 ultra-narrow notch filters (Q = 0,1) configurable in fixed/dynamic mode, for each 8 outputs	
Delay	0 m ÷ 233 m, 0 ms ÷ 679 ms	
Phase control	0°, 180°	
Output level	-60 dB ÷ 10 dB, step 0,5 dB	
Master level	-60 dB ÷ 10 dB, step 0,5 dB	
Tools		
Spectrum analyzer	Real time Fast Fourier Transform (FFT) for input/output signal spectrum analysis	

Data Connections	
Front panel	USB 2.0 (Type B USB, female)
Rear panel	Ethernet 802.3 (RJ45, female) RS232@38400 kbit/s (D-SUB DB9 female)

Display	
LCD	20 characters x 2 lines

PSU Module	
AC range	90 VAC to 264 VAC (Universal Input)
Input frequency	47 Hz to 67 Hz
Power consumption	Stand-by 24 VA, max 33 VA

Mechanical

Width	483 mm
Height	88 mm
Depth	260 mm
Weight	4,8 kg / 10.58 lbs

Temperature Range	
Indoor	0°C to 40°C (32°F to 102°F)

Humidity	
	0–98%, non-condensing

Compliances	
Electromagnetic compatibility	EN 55022, class B, FCC part 15, level B
Emissions	IEC/EN 61000-3-2 class B
Grounding scheme	AES48-2005 grounding scheme
Marking	CE
RoHS	2002/95/EC

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