

5. Operation

The DM8500 DSP is equipped with comprehensive library of processing modules that can be deployed and configured remotely by using the DM8500's PC software. The user can build the entire processing structure and signal routing using the remote software, and then compile and send to the DM8500 DSP.

5.1 DSP Algorithm Library

Group Name	Module Name	Description
AEC	Acoustic Echo Cancellation (AEC)	Proprietary AEC algorithm offers 24 channels of AEC that can be freely assigned whenever needed in your system design.
Mixers	Auto Mixer	Automatically adjusts mixer gain for mixer output and direct output.
	Standard Mixer	Adjusts mixer input and output level independently.
	Matrix Mixer	Assigns inputs to one or more outputs.
	Matrix Mixer Delay	Matrix Mixer with delay.
Controls	Auto Mixer Combiner	Reduces the background noise and risk of feedback in multiple microphone applications.
	Room Combiner	Enhances the capabilities of zone routing where the zones are configurable.
	Parametric	Allows precise EQ shaping by using frequency filters with adjustable center frequency and width.
Equalizers	Graphic	Adjusts EQ with filters on fixed frequency bands.
Feedback suppressors	2 Way Crossover	Automatically eliminates feedback by monitoring the signal and deploying notch filters when feedback has been detected.
	3 Way Crossover	Splits audio signals by frequency for separate processing. Module splits the signal at 2, 3 or 4 adjustable frequency points.
	4 Way Crossover	Includes an adjustable filter slope that can be set to 6, 12, 18, 24, 30, 36, 42 or 48 dB per octave.
	Butterworth Low/High Pass	Includes an adjustable filter slope that can be set to 12, 24, 36 or 48 dB per octave.
Crossover Filters	Linkwitz-Riley Low/High Pass	Offers adjustable gain from -27 dB to +9 dB.
	Low/High Shelf Filter	Module affects signal phase only, and the module can be used to compensate for phase anomalies.
All Pass Filter	Leveler	Automatically adjusts gain based on long-term signal averaging.
Dynamics	Compl/Limiter	Automatically adjusts gain based on short-term signal dynamics.
	Ducker	Module has two inputs, one input for the primary signal, the other input for the triggering signal. When the triggering signal reaches threshold, the module reduces or "ducks" the gain of the primary signal.
	Noise Gate	Automatically mutes until the gate is activated and opened by an incoming signal.
Ambient Noise Compensator	Ambient Noise Compensator	Automatically adjusts volume in response to changing background noise levels. External mics are used to monitor ambient background noise.

Group Name	Module Name	Description
Routers	Routers	Module allows each input to be assigned to multiple outputs via in/out. Each output allows only one assigned input at a time.
	Source Selection	Selects a single input from multiple input sources.
Delay	Level Control	Module is used to delay an audio signal.
	Invert	Adjusts an audio signal's level.
	Mute	Reversed the polarity (phase) of an audio signal by 180°.
	Preset	Reduces an audio signal's level to zero. Recalls system parameters at either a global or local level.
Generators	Remote Preset	Interfaces with external devices to control settings.
	Logic Gates Processor	Interprets and responds to logic signal events.
	Logic Delay	Adjusts logic output time.
	Signal/Preset Meter	Indicates signal presence.
	Peak Meter	Indicates peak signal level.
	RMS Meter	Indicates average signal level.
	Logic Meter	Indicates presence of logic trigger voltage.
	Tone Generator	Generates a single-frequency signal.
	Pink Noise Generator	Generates broad frequency noise shaped to the Pink Noise standard.
	White Noise Generator	Generates broad frequency noise with even spectral density.

6. Technical Specifications

Analogue Inputs	
Number of channels	10
Type	Analogue, electronically balanced Euroblock connectors
Impedance	10 kΩ
Maximum input level	+24 dBu
Gain range	0 to +66 dB with step 6 dB
Common mode rejection	Typically, 60 dB at 1 kHz
Crosstalk (inter-channel @ 1 kHz)	< -75 dB
Phantom power	+48 VDC, 7mA per channel
Analogue Outputs	
Number of channels	6
Type	Analogue, electronically balanced Euroblock connectors
Output impedance	200 Ω, balanced
Maximum output level	-31 dBu to +24 dBu
Dante Input / Output Characteristics	
Number of channels	64 input / 64 output
Connector	2 x RJ45
Sample rate	48 kHz
Resolution	24-bit
DM8500 internal latency	< 1.8 ms
DM8500 Dante latency	0.25 ms, 1.0 ms, or 5.0 ms (set by Dante controller)
Clock synchronization	Incoming Dante clock or DM8500 internal clock
ULTRANEET Digital Network	
Number of channels	16 out
Connector	RJ45
Sampling rate	48 kHz
Latency	< 1.8 ms
Cable	Shielded CAT-5
Cable length	Up to 75 m / 250 ft
USB Audio	
Number of channels	2 in / 2 out
Resolution	16-bit
Sampling rate	48 kHz
Type	Audio Class 1.0 compliant
Connector	USB, type B
GPIO	
Number of channels	6
Input voltage	0 to 5 V
Input impedance	4.7 kΩ to +5 V (2-wire mode) > 1 MΩ (3-wire mode)
Output voltage	0 / 5 V (unloaded)
Output impedance	550 Ω (source) 10 Ω (sink)
Output current	-1 mA (source) (Vo ≥ 4 V) 20 mA (sink), (Vo ≤ 0.4 V)
+5 V supply current	150 mA max

RS232	
Format	8-N-1, 38,400 baud
Connector	D9P female
Performance	
Frequency response	20 Hz to 20 kHz (±1 dB, input to output @ +4 dBu)
THD+N (1 kHz @ 0 dB gain, +4 dBu output)	< 0.005% (Bandwidth = 20 Hz-20 kHz)
Equivalent input noise	-125 dBu (Bandwidth = 20 Hz-20 kHz, gain = 66 dB, RS = 150 Ω)
Dynamic range	> 105 dB (Bandwidth = 20 Hz-20 kHz, none weighted)
A/D - D/A conversion	multi-bit 2A
AEC Module	Support 6 AEC Modules (Up to 24 channels totally) Each AEC module tail length setting options: 150ms with 4 channels or 300ms with 2 channels Each AEC Module can set individually up to 100 dB/sec
Power Requirements	
AEC convergence	100 VAC to 240 VAC ±10 %
Voltage	50 ~ 60 Hz
Frequency	< 48 W
Consumption	
Dimension / Weight	
Dimensions (H x W x D)	44 x 483 x 293 mm (1.7 x 19 x 11.5")
Weight	Net: 3.6 kg (7.9 lbs) Shipping: 4.8 kg (10.6 lbs)
Temperature Range	
Operation	+0° C to +45° C
Storage	-20° C to +60° C

Due to a policy of continual improvement, Klark Teknik reserves the right to alter the function or specification at any time without notice.