BOGEN®

CLEAR VOICE MN™

MASS NOTIFICATION

PLANAR TECHNOLOGY

Installations & Applications

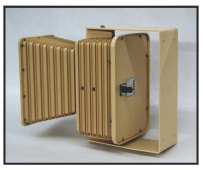
- Airports
- Museums
- Sport stadia
- Shopping Areas
- Railway stations
- Exhibition centers
- Places of Worship

CLEAR VOICE MN™ ...delivering new solutions for Wide Area Emergency Mass Notification

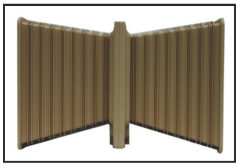
The demand for an effective communication system that can reach out to thousands of people at a time during natural disasters, civil unrest, or hostile attacks has become an international priority. Events occur daily in both the public and private sectors where people need information that will protect them from harm or direct them to places of refuge and safety.

In response to this global need, we have developed the Clear Voice MN™ family of Mass Notification systems that combines the all-weather MN Series loudspeakers and the new proprietary TURBO DSP and amplification modules. Together, the speakers and TURBO technology represent a new class of high performance systems that creates maximum vocal intelligibility and clarity...even while transmitting that message over very long distances. Designed specifically to meet the extraordinary acoustical and environmental demands of Mass Notification, the Clear Voice MN™ systems are the first choice when long distance clarity and intelligibility are the priorities.

This technology is equally adaptable and effective for both mobile and fixed installations. Mobile MN speakers allow for rapid deployment on tripod stands or in emergency vehicles, boats, or aircraft. The same CLEAR VOICE MN™ modules can also be integrated into new or existing outdoors notification systems suitable for universities and college campuses, critical industrial or manufacturing facilities, recreation venues, air-ground-sea transportation centers, and public gathering spaces.

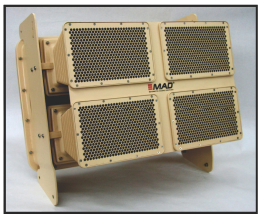


1MN w/bracket



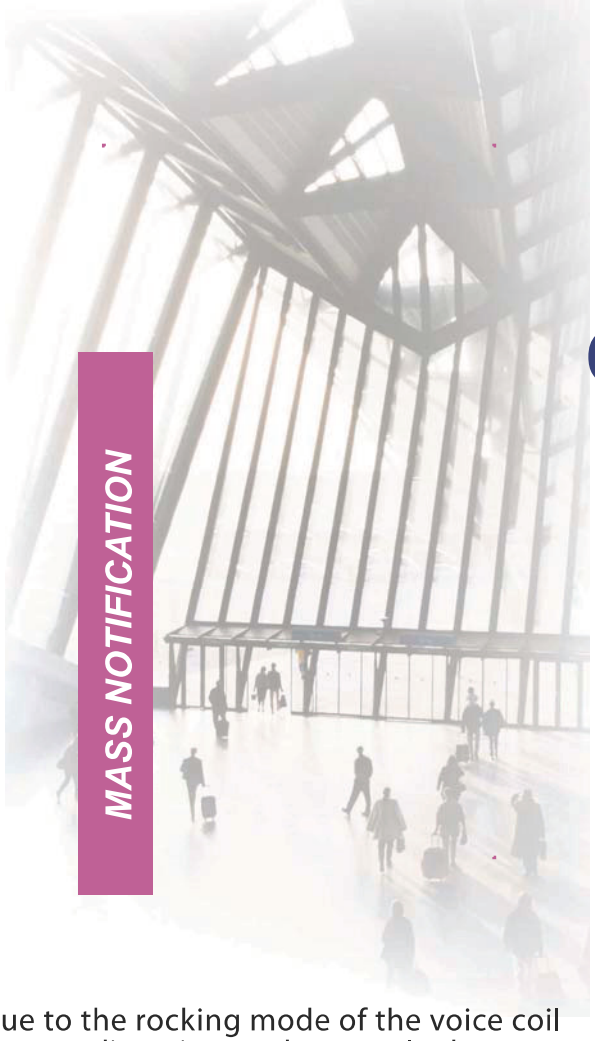
1MN-Dipole

2MN w/magnetic mount



4MN w/built-in array rigging

1MN	1 driver, 114 dB. Effective throw distance: 100 Yards
1MN - DIPOLE	1 driver, 114 dB. Effective throw distance: 140 Yards
2MN	2 drivers, 120 dB. Effective throw distance: 250 Yards
4MN	4 drivers, 126 dB. Effective throw distance: 650 Yards
Custom Array	Up to 144 dB. Effective throw distance: Beyond 0.7 Miles



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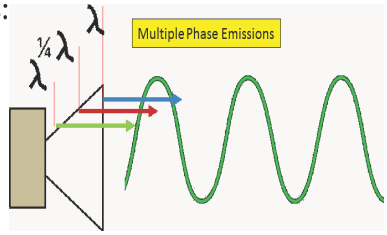
CLEAR VOICE MN™

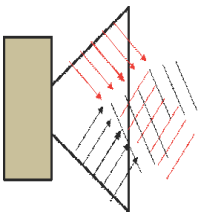
STATE OF THE ART INTELLIGIBILITY

The almost perfect STI readings resulting from Clear Voice MN™ planar technology is due to the inherent advantages of producing a single phase emission from a single flat plane source. Consider for a moment how a regular cone speaker functions....

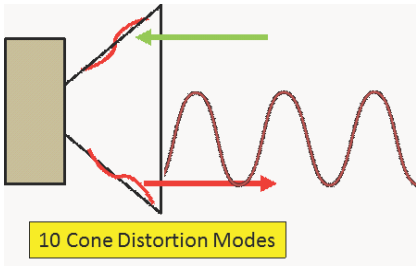
1 The conical shape of the cone results in multiple phase emissions:



2 Further perpendicular phase collisions take place:

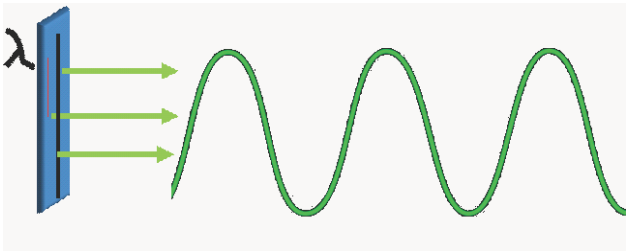


3 Due to the rocking mode of the voice coil up to 10 distortion modes may also happen:



We can see from the above that a standard cone speaker produces multiple phase emissions, perpendicular phase collisions, and may have up to 10 cone distortion modes all contributing to a lot of sound and fury, but very little intelligibility. In fact, only 10% of the SPL produced by a cone speaker is information the brain can use, but for the most sophisticated DSP engine in the world – the human brain – it is in most cases enough. However, what would happen if 100% of the information coming from a speaker was information the brain could use?

4 A Clear Voice MN™ driver on the other hand produces a single, perfectly shaped sound wave and can as a result achieve a much higher intelligibility than a standard speaker can reach and can be heard and understood over far greater distances. Since the Clear Voice MN™ driver provides 100 % intelligible information it does not need to be as loud as a cone speaker:



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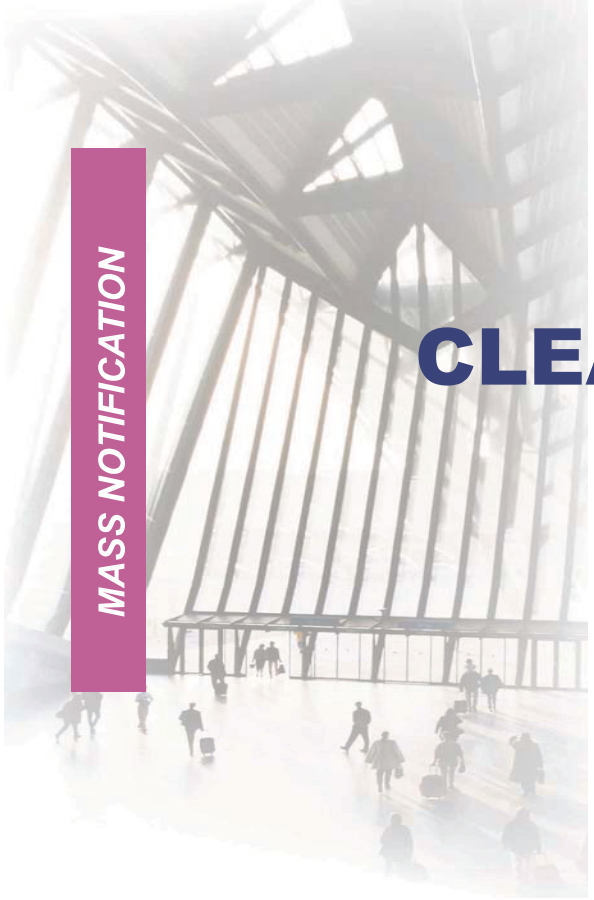

MASS NOTIFICATION

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CLEAR VOICE MN™

Clear Voice MN™ changes all previously held notions of ambient noise levels. The question of how loud does a speaker have to operate to overcome the masking effects of ambient noise has been a point of discussion within the professional audio world for decades. Conventional wisdom has suggested that the signal must be approximately 12 dB louder than ambient noise levels. With Clear Voice MN™ technology, ambient noise levels can be as much as 18 dB louder than the Clear Voice MN™ driver, but full intelligibility is still maintained. Due to the imperfections of conventional speaker technology, up to 90% of the energy emitted from a standard speaker is just that – energy, in the form of noise – our brain will take the 10% intelligibility and piece the message together. With Clear Voice MN™ technology, a signal 1/10 as strong can deliver the same intelligibility since 100% of the energy is useful information. This means better intelligibility even when the ambient noise is significantly louder than the speaker. The following chart depicts one single Clear Voice MN™ driver driven at 74 dB vs ambient noise levels of increasing magnitude.

AMBIENT NOISE LEVELS VERSES INTELLIGIBILITY TESTS
Clarity Evaluation

Speaker Model	Ambient noise level @ listening position; Noise B/W= 90-2kHz* [1]	Spoken word SPL @ listening position* [2]	Subjective Intelligibility Result* [3]	Score* [4]	Noise-to-Signal Delta* [5]
One 2MN	74.0	74.0	Absolute Total clarity	5	0.0 dB
	80.0	74.0	Absolute Total clarity	5	-6.0 dB
	83.0	74.0	Full clarity	4	-9.0 dB
	86.0	74.0	Full clarity	4	-12.0 dB
	89.0	74.0	Clear w/effort	3	-15.0 dB
	92.0	74.0	Clear w/more effort	2	-18.0 dB
	95.0	74.0	Clear w/extreme effort	1	-21.0 dB

KEY FEATURES:

- Very high intelligibility
- Very long throw distances
- Single point source
- Weather proof
- Rugged housing
- 5 year warranty
- Controllable coverage pattern
- Uniform 4 Ohm impedance over the entire frequency curve

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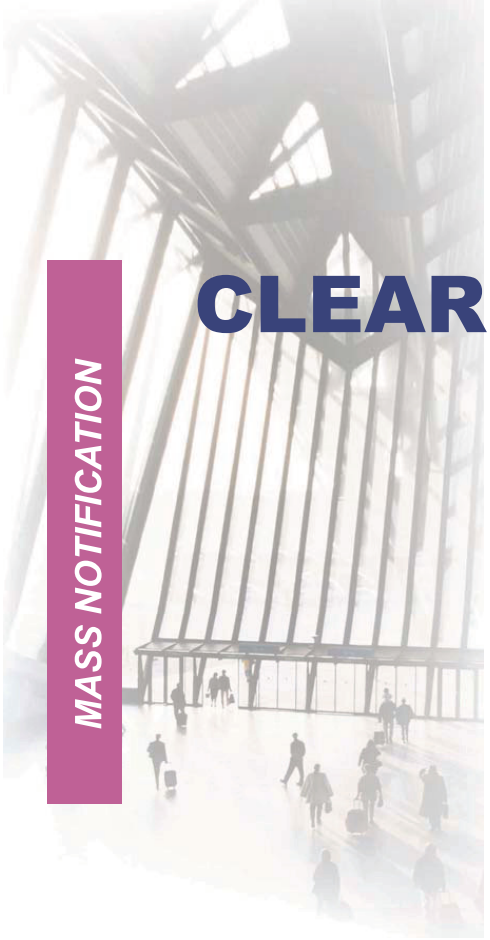

MASS NOTIFICATION

CLEAR VOICE MN™

Clear Voice MN™ Arrays

The 2-MN and 4-MN modules can be configured as line arrays to further increase audible distance. Planar array characteristics typically produce less than 3 dB attenuation each time the distance doubles which can provide the listeners with intelligibility beyond 0.7 miles (after which atmospheric and geographic circumstances effectively limits the throw).

The Turbo Algorithm

Our team has also developed a Turbo algorithm with the purpose of further increasing penetration over distance and to make up for atmospheric difficulties. The turbo algorithm can be purchased as an option to all models and increases intelligibility and throw distance by as much as 30%. Much as a trained reader does not need to read every letter or word in a sentence, our brain can fill in the difference if only certain key parts of speech are provided. The Turbo algorithm focuses energy on those key parts and ignores less important portions.

SPECIFICATIONS:	1 MN	1 MN DiPole	2 MN	4 MN
Frequency Response	250Hz - 18 KHz	300Hz - 18 KHz	200Hz - 18 KHz	200Hz - 18 KHz
MAX SPL	114 dB	114 dB	120	126
Dispersion (V x H)	30 x 40	30 x 40	30 x 30	25 x 25
Power Handling (RMS)	100 watt	100 watt	200 watt	400 wat
Impedance	4 Ohm	4 Ohm	2 OR 8 Ohm	4 or 16 Ohm
Dimensions (w,h,d) inches	8 x 10.4 x 12.4	8 x 10.4 x 15	11 x 23 x 12.4	22 x 23 x 12.4
Weight	6 lbs	8 lbs	23 lbs	46 lbs
Finish	Sand or Black	Sand or Black	Sand or Black	Sand or Black
Environmental Rating	IP 66 MIL-STD-810F	IP 66 MIL-STD-810F	IP 66 MIL-STD-810F	IP 66 MIL-STD-810F
Housing Material	Xenoy	Xenoy	Xenoy	Xenoy
Accessories	Optional Brackets Transformer	Optional Brackets Transformer	Optional Brackets Transformer	Optional Brackets Transformer

ARCHITECTS' AND ENGINEERS' SPECIFICATIONS:

Unit shall be Clear Voice MN™ Model (1-MN, 1-MN Dipole, 2 MN, 4 MN or array of MN models) or approved equal planar technology speaker. Weather-proof assembly shall be comprised of Xenoy housing and planar driver incorporating stainless steel screws and coated aluminum brackets or stainless steel brackets. Finish shall be sand colored or black.

Frequency response shall be 200, 250 or 300 Hz - 18,000 and the impedance shall be flat at 2, 4, or 16 Ohm over the entire frequency spectrum without fluctuation. Intelligibility shall remain at a minimum STI of .5 with an ambient noise level 18 dB louder than the given SPL of the speaker.

Unit shall meet IP-66 and MIL-STD-810-F specifications.

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