

### BMA 360D

The BMA 360D with Dante® audio is the world's most technology advanced beamforming microphone array ceiling tile and works with any Dante enabled DSP mixer. Choose any DSP mixer that has Dante audio and the BMA 360D pairs perfectly and delivers unrivaled audio Performance performance.



- > Pure unprocessed beam audio is delivered on individual Dante transmit channels—one channel for each beam. A smart-switched output is delivered on a separate Dante transmit channel which provides the best selection of talkers and provides ClearOne's full suite of audio enhancements including echo cancellation, noise cancellation, and level control.
- > The industry's only ultra-wideband, frequency invariant beamforming mic array with uniform gain response across all frequency bands. With FiBeam™ and DsBeam™ technology, participants experience natural and full-fidelity audio across all beams and within a single beam.
- > Convenient preset beam patterns for common room layouts or custom beams patterns for unique floorplans, combined with adaptive steering (think of it as smart switching), provides impeccable coverage of every conference participant.
- > Due to the exceptional accuracy of the beamforming and adaptive steering technology, voice lift and camera tracking functions have remarkable performance on any capable attached DSP mixer.
- > Individual Dante receive channels drive built-in, robust power amplifiers. The amplifiers are configurable as 4 x 15 Watt or 2 x 30 Watt and provide flexibility for driving loudspeakers.
- > Supports two different ceiling grid types: 24 in and 600 mm. A VESA-mount hole pattern provides support for pole mounting. Hard-ceiling mount adapter kits are also available.

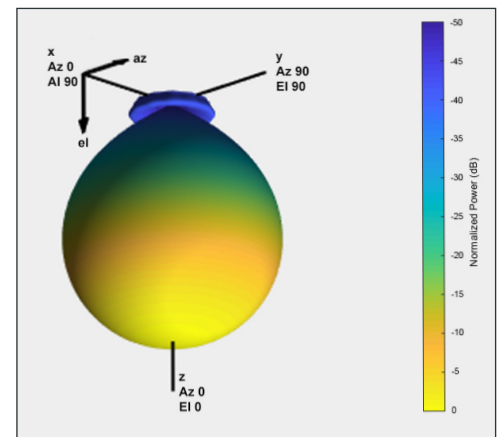
#### APPLICATIONS

- Audio Conferencing
- Video Conferencing
- Voice Lift

#### WORKSPACES

- Conference rooms
- Boardrooms
- Courtrooms
- Classrooms
- Telemedicine  
Theaters

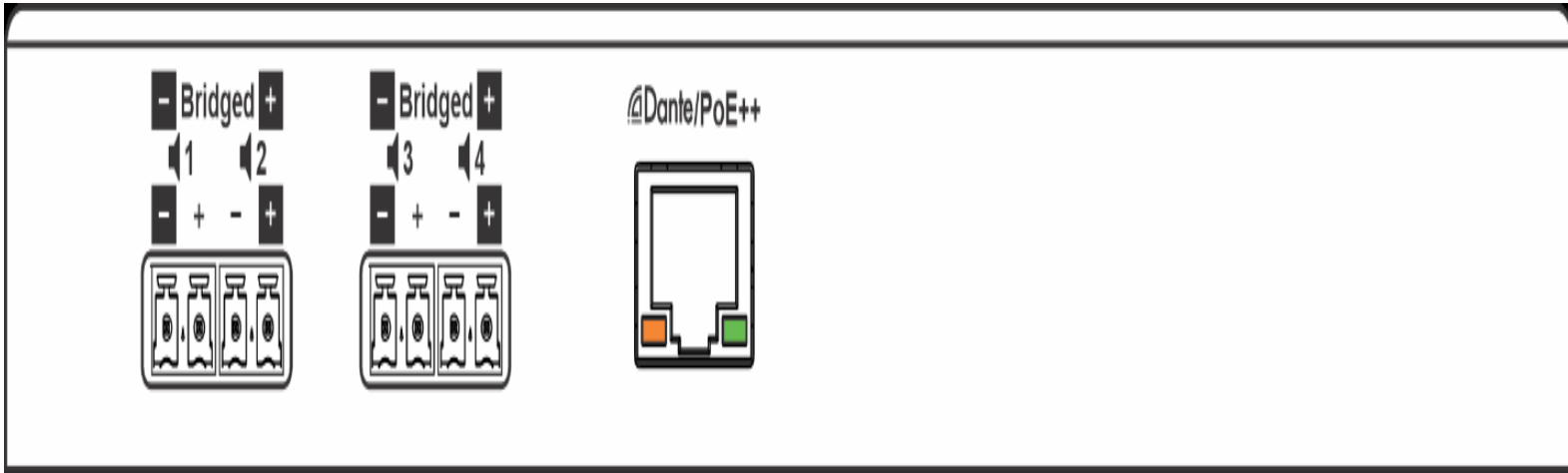
## AUDIO CONFERENCING



#### Deep Sidelobe Beamforming

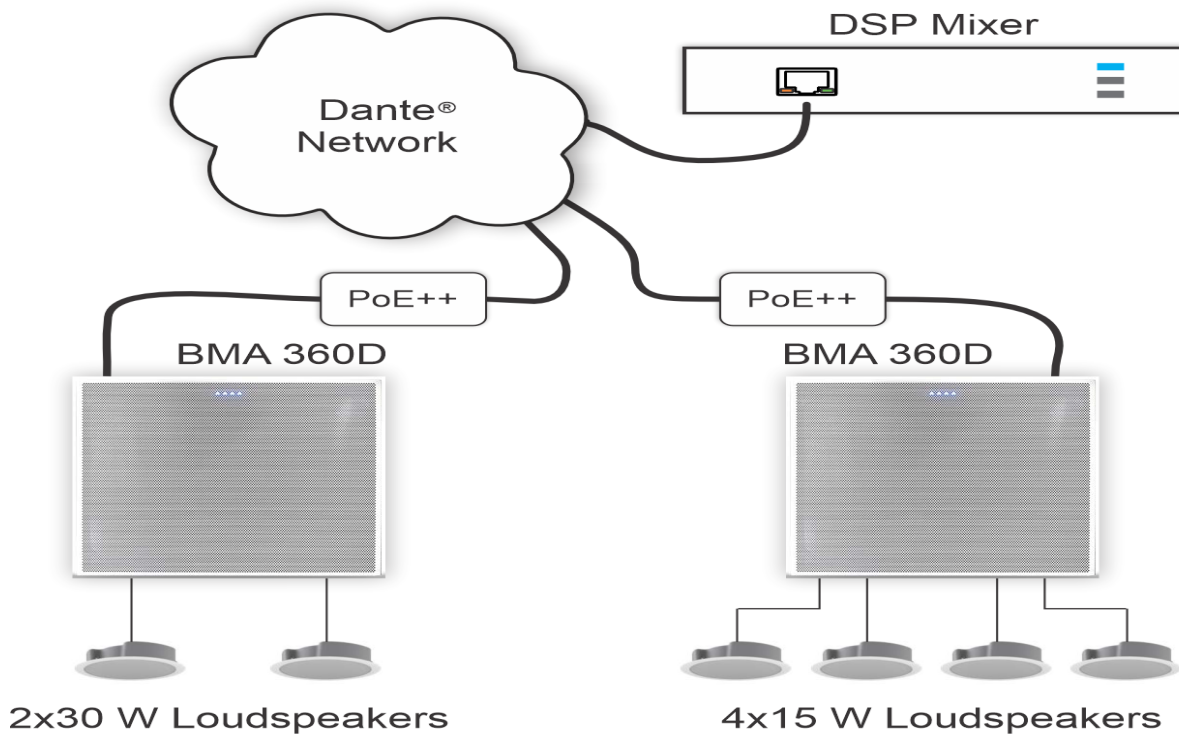
Deep Sidelobe Beamforming, DsBeam™, provides unparalleled sidelobe depth, below -40 dB, resulting in superior rejection of reverb and noise, even in difficult spaces, for superb clarity and intelligibility.

### Connections



### Example System Diagram

Two BMA 360D microphone arrays, with 2x30 W and 4x15 W speaker configurations, connected to a Dante network with a Dante enabled DSP Mixer.

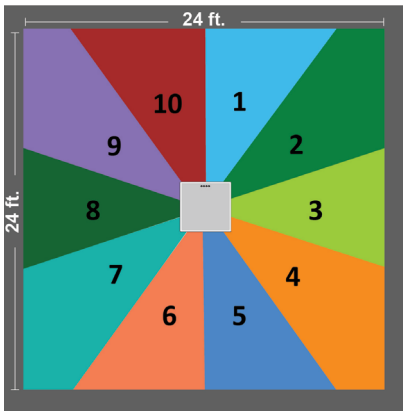


### Configuration

Configuration with ClearOne's CONSOLE AI Lite software

### Room Coverage

Full Circle/Square



Room size	Beams
10' x 10' to 18' x 18'	6
12' x 12' to 20' x 20'	8
22' x 22' to 24' x 24'	10

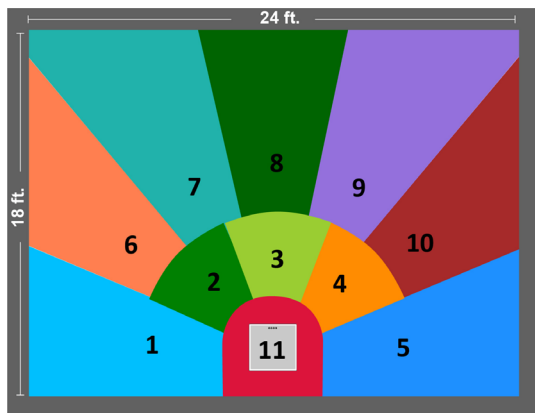
**Note:** The example room sizes are based on a 10 ft. ceiling.

Rectangular



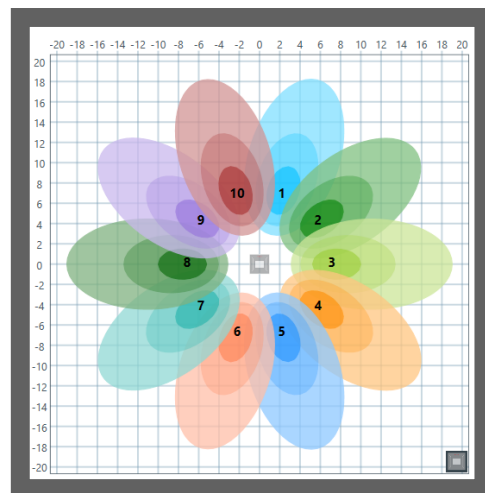
Room size	Beams
10' x 14' to 18' x 22'	6
10' x 16' to 18' x 24'	8
12' x 22' to 20' x 36'	12

Semi-Circle/Classroom



Room size	Beams
16' x 8' to 22' x 16'	6
24' x 18'	11

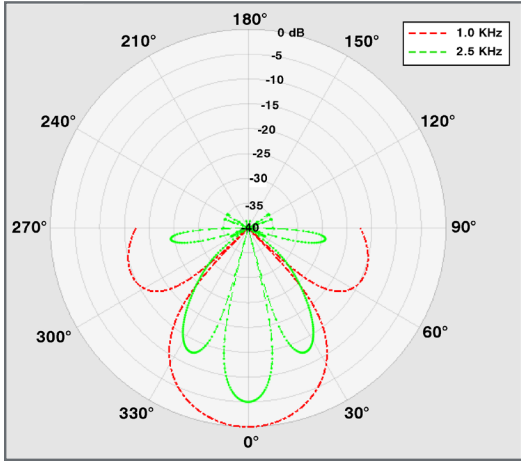
Custom Beams



Room size	Beams
Up to 25' x 25'	1 to 12

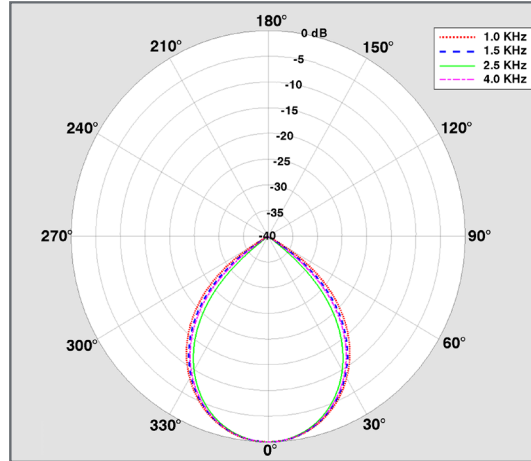
### Frequency Invariant and Deep Sidelobe Beamforming

Typical Beamforming



A set of polar plots illustrating a beamformer with gain and coverage that vary with frequency, and that has unwanted large sidelobes.

ClearOne BMA 360 Beamforming with FiBeam™ and DsBeam™

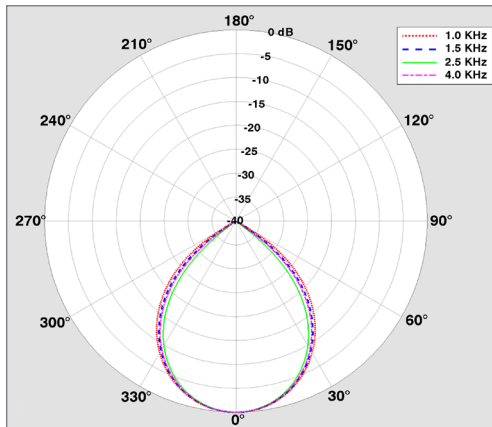


A set of polar plots of the BMA 360 beam performance. These plots show that the pickup pattern is frequency invariant with ultra-low sidelobes below -40 dB.

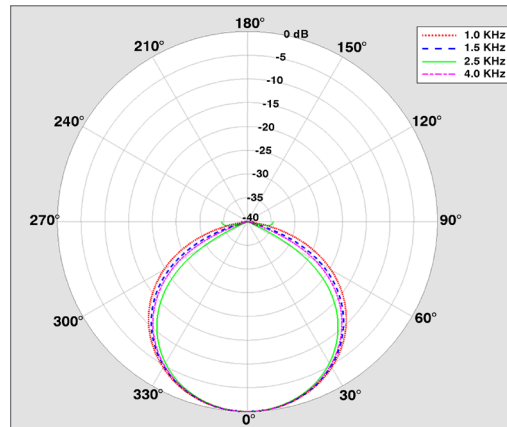
### Polar Plots (Broadside)

Typical Far Field Performance

Narrow Beam, HPBW = 35 Degrees



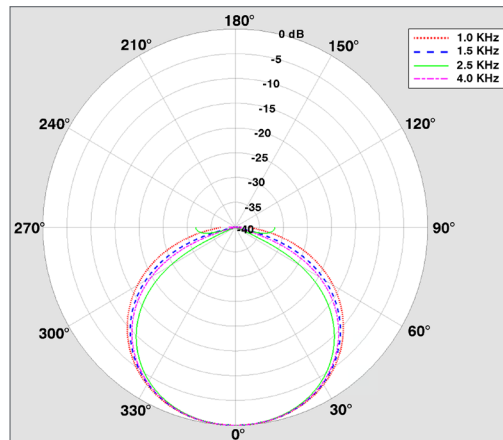
Medium Beam, HPBW = 45 Degrees



Gain response is frequency invariant for all beamwidths.

HPBW = Half Power Beamwidth

Wide Beam, HPBW = 55 Degrees

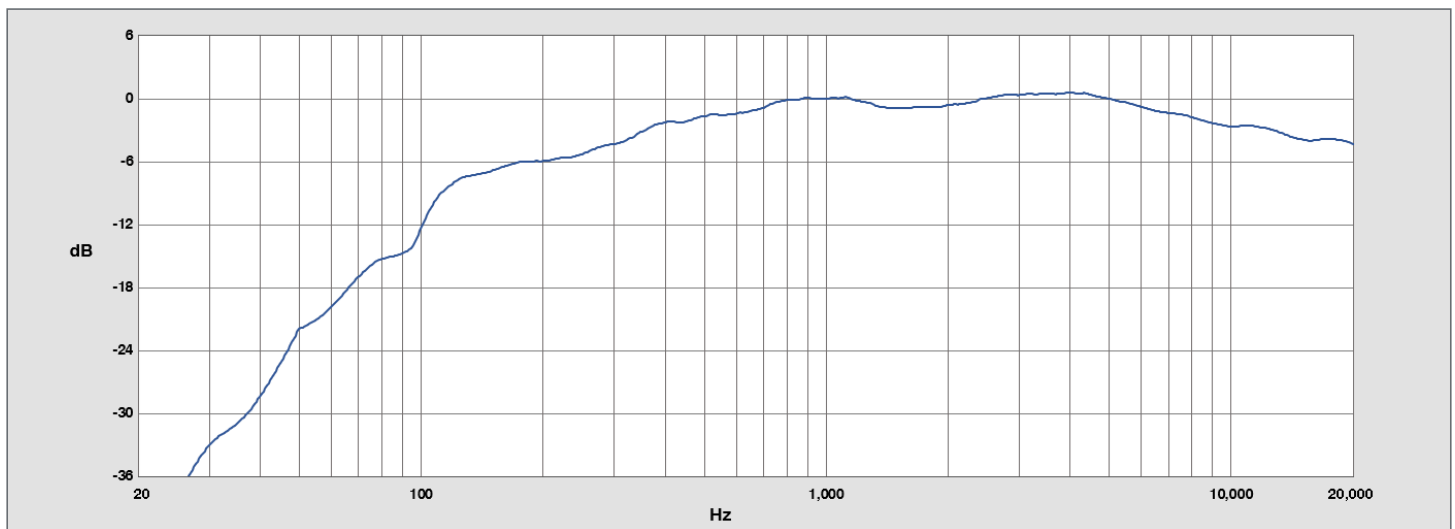


# BMA 360D

### Frequency Response (Broadside)

Typical Frequency Response

Frequency response measured directly on-axis from a distance of 2 meters.



# BMA 360D

- BEAMFORMING FEATURES** .....
- True Frequency Invariant Beamformer: Gain response is unvarying across frequency
  - Beamwidths: 35 °, 45 ° and 55 ° with Frequency Invariance
  - Beamforming Range: 100 Hz to 20 KHz
  - Deep Sidelobes: Down to 45 dB of depth
  - Beam Pointing Accuracy: 0.2 dB
  - Dynamic Range: 20 Hz to 20 KHz, > 70 dB
  - Number of Beams: Up to 12
  - Room Patterns: Full Circle/Square, Rectangular, Semi-Circle/Classroom, Custom Beams
  - Coverage Sizes: Up to 600 square feet/58 square meters
  - Ceiling Height: Configurable with CONSOLE AI from 7 ft to 20 ft
- AMPLIFIER OUTPUT** .....
- Type: 5.08 mm Header, Phoenix-type Euroblock
  - Audio: 4 channels
  - Output Power: 4x15 W Max, 8 Ω load, or 2x30 W, 4 Ω load, Bridged
  - Frequency Response: 20 Hz – 22 kHz, +/- 0.5 dB
- CONFIGURATION** .....
- Acoustic Echo Cancellation (AEC) On/Off
  - Noise Cancellation (NC) on/off. Range: 6 to 25 dB depth.
  - Automatic Level Control (ALC) On/Off
  - Gain Adjust
  - Mute On/Off
- SOFTWARE** .....
- CONSOLE® AI Lite
- DIMENSION & WEIGHT** .....
- 24 IN
    - Product Dimension: 23.7 x 23.7 x 2.1 " (602.5 x 602.5 x 54.1 mm)
    - Product Weight: 7.7 lbs (3.5 Kg)
    - Shipping Weight: 11.4 lbs (5.2 Kg)
  - 24 IN
    - Product Dimension: 23.7 x 23.7 x 2.1 " (602.5 x 602.5 x 54.1 mm)
    - Product Weight: 11.1 lbs (5.0 Kg)
    - Shipping Weight: 14.2 lbs (6.4 Kg)
  - 600 mm
    - Product Dimension: 23.3 x 23.3 x 2.1 " (592.5 x 592.5 x 54.1 mm)
    - Product Weight: 9 lbs (4 Kg)
    - Shipping Weight: 12.8 lbs (5.8 Kg)
- MOUNTING** .....
- Ceiling Mount: 24 in, 600 & 625 mm drop-ceiling grid
  - VESA© Mount ready: 100 mm hole pattern, M 4 x 10 mm
- POE ++ PORT** .....
- Port Type: RJ-45 PoE power
  - Power on all pairs
  - 56 V 90 W IEEE 802.3 bt compliant devices or equivalent, Mode A and B, Midspan
  - Cable: Solid core, 23 AWG, factory terminated Cat 6

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- POE REQUIREMENTS** .....
- No speakers: 36 W PoE, connected via P-Link or PoE++
  - Speakers: Requires 56 V 90 W IEEE 802.3 bt PoE
- POWER AND THERMAL** .....
- Power Source: PoE injector or equivalent
  - Power Consumption:
    - 100-240 VAC, 50/60 Hz
    - 23 Watt typical without speaker amp
    - 55 W at 1/3 power x 4 @ 1 kHz
  - Thermal: 270 BTU/hr at max power
  - Operating Temperature: 14 °F/-10 °C to 104 °F/40 °C ambient temperature
- ACCESSORIES** .....
- 910-3200-202 PoE Power supply kit, 36 W
  - 910-3200-209 PoE Power supply kit, 90 W
  - 910-3200-208-CB BMA 360 Conduit Box
- MOUNTS FOR NON-TILE CEILINGS** ....
- 910-3200-210 BMA 360 Surface-Mount Kit 24 in
  - 910-3200-210-I BMA 360 Surface-Mount Kit 600 mm
  - 910-3200-212 BMA 360 Recessed-Mount Kit 24 in
  - 910-3200-212-I BMA 360 Recessed-Mount Kit 600 mm
- PART NUMBERS** .....
- 910-3200-208-D BMA 360D
  - 910-3200-208-D-I BMA 360D INTERNATIONAL

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