DATA SHEET
TESIRA® TCM-1
AVB BEAMTRACKING™ CEILING MICROPHONE

The TCM-1 is an AVB ceiling microphone for use in Tesira systems. Comprising a pendant microphone and plenum box, each microphone includes Beamtracking™ technology with three 120-degree zones, providing full 360-degree coverage of the meeting space. The TCM-1 microphone actively tracks and intelligently mixes conversations from around the table, allowing far-end conference participants to experience the conversation naturally. The Tesira TCM-1 comes with its own digital signal processing module for Beamtracking, and each plenum box comes with an additional RJ-45 connector for daisy-chain connections. A maximum of three microphones are permitted per daisy chain (one TCM-1 or TCM-1A required, plus up to two TCM-1EX). The TCM-1 is well suited for a variety of room types and sizes that require high-quality audio solutions, such as conference rooms or council chambers.

FEATURES

- Beamtracking technology actively tracks and intelligently mixes conversations
- Three 120-degree zones for 360 degrees of coverage
- Plenum box includes DSP for Beamtracking
- LED mute status indicator
- Pendant microphone available in either white or black
- User-adjustable mic height
- Easy single-cable installation process
- Optional tile bridge mounting accessory available
- Evaluated to the requirements of UL 2043 and is suitable for use in air handling spaces
- Additional RJ-45 for daisy-chain connection to a TCM-1EX microphone (maximum of three mics per daisy chain; one TCM-1 or TCM-1A and two TCM-1EX)
- CE marked, UL listed, and RoHS compliant
- Covered by Biamp Systems' five-year warranty

ARCHITECTS & ENGINEERS SPECIFICATIONS

The Beamtracking™ ceiling microphone shall be designed exclusively for use with Biamp® Tesira® systems. The Beamtracking ceiling microphone shall be comprised of a pendant microphone and plenum box. The Beamtracking ceiling microphone shall utilize an AVB/TSN network via an RJ-45 connector for audio networking as well as software configuration and control. The Beamtracking ceiling microphone shall contain eight-element microphones, and shall provide three 120-degree zones for 360 degrees of coverage. The Beamtracking ceiling microphone shall offer multidirectional beamforming and automatic signal tracking capabilities. The Beamtracking technology shall operate in conjunction with acoustic echo cancellation technology (AEC) in accordance with U.S. Patent 9659576. The signal processing of the Beamtracking ceiling microphone shall be configurable via the Tesira design software, including but not limited to: signal routing and mixing, equalization, filtering, dynamics, and delay, as well as control, monitoring, and diagnostic tools. The Beamtracking ceiling microphone shall offer simple installation and microphone height adjustment, and shall be mountable on a ceiling tile or in open-ceiling environments. The Beamtracking ceiling microphone shall be powered by PoE (IEEE 802.3at Class 3). The Beamtracking ceiling microphone shall be suitable for use in air handling spaces in accordance with UL 2043, and shall provide a second RJ-45 connector to allow up to two additional expander TCM-1EX microphones to be daisy-chained together. The Beamtracking ceiling microphone shall be CE marked, UL listed, and compliant with the RoHS directive. Warranty shall be five years. The Beamtracking ceiling microphone shall be Tesira TCM-1.

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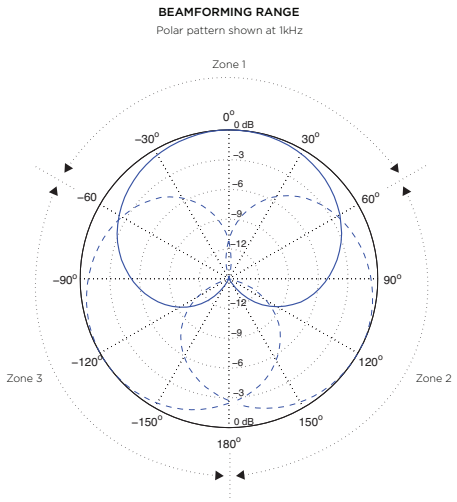
TESIRA TCM-1 SPECIFICATIONS

PENDANT MICROPHONE

Microphone Technology:	8-Element Digital Array
Frequency Response (150 Hz - 16 kHz):	± 3dB
Polar Pattern:	Beamformed
Sensitivity (94dB SPL, 1kHz):	> 70dB
Maximum SPL (at 0.5% THD):	106dB
Dynamic Range (THD+N < 10%):	92dB, A-Weighted
Indicators:	Mute Indicator (Green/Red LED)
Digital Interface:	Custom/Proprietary
Connector:	Custom 2-pin (cable length 10 feet [3 meters])
Overall Dimensions	
Height:	2 inches (51 mm)
Width:	2.5 inches (63 mm)
Depth:	2.5 inches (63 mm)
Weight:	0.4 lbs (0.2 kg)

PLENUM BOX

Connectors:	Two RJ-45: one between TCM-1 plenum box and switch, the other between TCM-1 plenum box and additional TCM-1EX plenum box; 2-pin 3.5 mm Phoenix connector to TCM-1 microphone
Power:	PoE (IEEE 802.3at Class 3, 15.4W)
Indicators:	Power Indicator (Green/Yellow/Red LED)
Digital Interface:	Custom/Proprietary
Max Distance Between Devices:	330 feet (100 meters) from switch to TCM-1 plenum box; 33 feet (10 meters) for daisy-chained connections between TCM plenum boxes
Overall Dimensions	
Height:	2 inches (51 mm)
Width:	7 inches (178 mm)
Depth:	7.125 inches (181 mm)
Weight:	2.4 lbs (1.1 kg)
Environmental	
Ambient Operating Temperature Range:	32 - 104° F (0 - 40° C)
Humidity:	0-95% relative humidity (non-condensing)
Altitude:	0-10,000 ft (0-3000m) MSL
Compliance:	FCC Part 15B (USA) CE marked (Europe) UL and C-UL listed (USA and Canada) RoHS Directive (Europe) Evaluated to the requirements of UL 2043 and is suitable for use in air handling spaces



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DATA SHEET
TESIRA® TCM-1A
AVB BEAMTRACKING™ CEILING MICROPHONE WITH POE+ AMPLIFIER

The TCM-1A is an AVB ceiling microphone and PoE+ (IEEE 802.3at Class 4, 30W) amplifier for use in Tesira systems. Comprising a pendant microphone and plenum box, each microphone includes Beamtracking™ technology with three 120-degree zones, providing full 360-degree coverage of the meeting space. The TCM-1A microphone actively tracks and intelligently mixes conversations from around the table, allowing far-end conference participants to experience the conversation naturally. The 2-channel PoE+ amplifier includes an internal limiter, selectable power, and is also capable of operating in a burst mode to handle peak signals, providing up to 40 watts (4Ω load) or 30 watts (8Ω load) per channel. The TCM-1A comes with its own digital signal processing module for Beamtracking, and each plenum box comes with an additional RJ-45 connector for daisy-chain connections. A maximum of three microphones are permitted per daisy chain (one TCM-1 or TCM-1A required, plus up to two TCM-1EX). The TCM-1A is well suited for a variety of room types and sizes that require high-quality audio solutions, such as conference rooms or council chambers.

FEATURES

- Beamtracking technology actively tracks and intelligently mixes conversations
- Plenum box includes DSP for Beamtracking and a PoE+ amplifier
  - Two channels; 4 watts continuous power per channel
  - Burst mode to handle peak signals in accordance with ANSI/CTA-2006-B; supports up to 40 watts (4Ω load) or 30 watts (8Ω load) per channel
  - Software-selectable power vs. channel count
  - Includes internal limiter function
- Three 120-degree zones for 360 degrees of coverage
- Pendant microphone available in either white or black
- User-adjustable mic height
- Optional tile bridge mounting accessory available
- Evaluated to the requirements of UL 2043 and is suitable for use in air handling spaces
- Additional RJ-45 for daisy-chain connection to a TCM-1EX microphone (maximum of three mics per daisy chain; one TCM-1 or TCM-1A and two TCM-1EX)
- CE marked, UL listed, and RoHS compliant
- Covered by Biamp Systems' five-year warranty

ARCHITECTS & ENGINEERS SPECIFICATIONS

The Beamtracking™ ceiling microphone shall be designed exclusively for use with Biamp® Tesira® systems. The Beamtracking ceiling microphone shall be comprised of a pendant microphone and plenum box. The Beamtracking ceiling microphone shall utilize an AVB/TSN network via an RJ-45 connector for audio networking as well as software configuration and control. The Beamtracking ceiling microphone shall contain eight-element microphones, and shall provide three 120-degree zones for 360 degrees of coverage. The Beamtracking ceiling microphone shall offer multidirectional beamforming and automatic signal tracking capabilities. The Beamtracking technology shall operate in conjunction with acoustic echo cancellation technology (AEC) in accordance with U.S. Patent 9659576. The signal processing of the Beamtracking ceiling microphone shall be configurable via the Tesira design software, including but not limited to: signal routing and mixing, equalization, filtering, dynamics, and delay, as well as control, monitoring, and diagnostic tools. The plenum box of the Beamtracking ceiling microphone shall provide two output channels of 4 watts of continuous power per channel into a 4-ohm load and an 8-ohm load. The plenum box of the Beamtracking ceiling microphone shall also provide burst power output of 40 watts per channel into a 4-ohm load, and 30 watts per channel into an 8-ohm load in accordance with ANSI/CTA-2006-B. The Beamtracking ceiling microphone shall offer simple installation and microphone height adjustment, and shall be mountable on a ceiling tile or in open-ceiling environments. The Beamtracking ceiling microphone shall be powered by PoE+ (IEEE 802.3at Class 4). The Beamtracking ceiling microphone shall be suitable for use in air handling spaces in accordance with UL 2043, and shall provide a second RJ-45 connector to allow up to two additional expander TCM-1EX microphones to be daisy-chained together. The Beamtracking ceiling microphone shall be CE marked, UL listed, and compliant with the RoHS directive. Warranty shall be five years. The Beamtracking ceiling microphone shall be Tesira TCM-1A.

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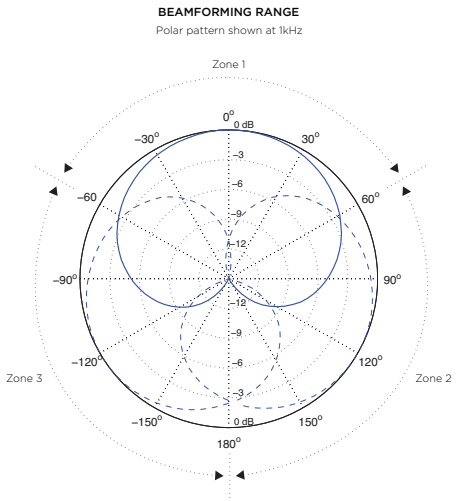
TESIRA TCM-1A SPECIFICATIONS

PENDANT MICROPHONE

Microphone Technology:	8-Element Digital Array
Frequency Response (150 Hz - 16 kHz):	± 3dB
Polar Pattern:	Beamformed
Sensitivity (94dB SPL, 1kHz):	> 70dB
Maximum SPL (at 0.5% THD):	106dB
Dynamic Range (THD+N < 10%):	92dB, A-Weighted
Indicators:	Mute Indicator (Green/Red LED)
Digital Interface:	Custom/Proprietary
Connector:	Custom 2-pin (cable length 10 feet [3 meters])
Overall Dimensions	
Height:	2 inches (51 mm)
Width:	2.5 inches (63 mm)
Depth:	2.5 inches (63 mm)
Weight:	0.4 lbs (0.2 kg)



PLENUM BOX

Connectors:	Two RJ-45: one between TCM-1A plenum box and switch, the other between TCM-1A plenum box and additional TCM-1EX plenum box; 2-pin 3.5 mm Phoenix connector to TCM-1A microphone
Power:	PoE+ (IEEE 802.3at Class 4, 30W)
Indicators:	Power Indicator (Green/Yellow/Red LED) Amp Status Indicator (Green/Yellow/Red LED)
Digital Interface:	Custom/Proprietary
Max Distance Between Devices:	330 feet (100 meters) from switch to TCM-1A plenum box; 33 feet (10 meters) for daisy-chained connections between TCM plenum boxes
Overall Dimensions	
Height:	2 inches (51 mm)
Width:	7 inches (178 mm)
Depth:	7.125 inches (181 mm)
Weight:	2.4 lbs (1.1 kg)
Environmental	
Ambient Operating Temperature Range:	32 - 104° F (0 - 40° C)
Humidity:	0-95% relative humidity (non-condensing)
Altitude:	0-10,000 ft (0-3000m) MSL
Compliance:	FCC Part 15B (USA) CE marked (Europe) UL and C-UL listed (USA and Canada) RoHS Directive (Europe) Evaluated to the requirements of UL 2043 and is suitable for use in air handling spaces

AMPLIFIER

Number of Channels:	2
Connectors:	4-pin 5.08 mm Phoenix connectors
Amplifier Topology:	Class D
Burst Power Output (per ANSI/CTA-2006-B @ 1kHz):	
4Ω (per channel):	40W
8Ω (per channel):	30W
Continuous Power Output:	
Single Channel Driven, (4Ω, 8Ω):	8W
Dual Channel Driven (4Ω, 8Ω):	4W
THD+N (20Hz-20kHz, at continuous power):	< 0.3%
Frequency Response (20Hz-20kHz):	± 1dB
Dynamic Range (20Hz-20kHz BW):	> 85dB
Minimum Operational Load:	4Ω
Intermodulation distortion (SMPTE):	< 0.3%
Cross Talk (channel to channel @ 1kHz):	< -90dB

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DATA SHEET
TESIRA® TCM-1EX
EXPANSION AVB BEAMTRACKING™ CEILING MICROPHONE

The TCM-1EX is an expansion AVB ceiling microphone for use in Tesira systems. Comprising a pendant microphone and plenum box, each microphone includes Beamtracking™ technology with three 120-degree zones, providing full 360-degree coverage of the meeting space. The TCM-1EX microphone actively tracks and intelligently mixes conversations from around the table, allowing far-end conference participants to experience the conversation naturally. The Tesira TCM-1EX is intended to be used as a second and third microphone in conjunction with a TCM-1 or TCM-1A; it cannot operate as a standalone device. Each plenum box comes with an additional RJ-45 connector for daisy-chain connections. A maximum of three microphones are permitted per daisy chain (one TCM-1 or TCM-1A required, plus up to two TCM-1EX). The TCM-1EX is well suited for a variety of room types and sizes that require high-quality audio solutions, such as conference rooms or council chambers.

FEATURES

- Must be used with a Tesira TCM-1 or TCM-1A microphone
- Beamtracking technology actively tracks and intelligently mixes conversations
- Three 120-degree zones for 360 degrees of coverage
- LED mute status indicator
- Pendant microphone available in either white or black
- User-adjustable mic height
- Easy single-cable installation process
- Optional tile bridge mounting accessory available
- Evaluated to the requirements of UL 2043 and is suitable for use in air handling spaces
- Additional RJ-45 for daisy-chain connection to another TCM-1EX microphone (maximum of three mics per daisy chain; one TCM-1 or TCM-1A and two TCM-1EX)
- CE marked, UL listed, and RoHS compliant
- Covered by Biamp Systems' five-year warranty

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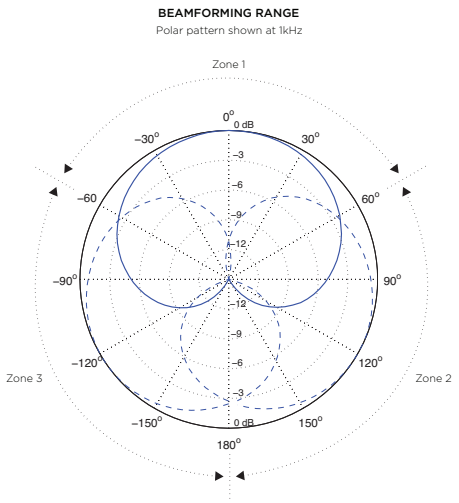
ARCHITECTS & ENGINEERS SPECIFICATIONS

The expansion Beamtracking™ ceiling microphone shall be designed exclusively for use with Biamp® Tesira® systems. The expansion Beamtracking ceiling microphone shall be comprised of a pendant microphone and plenum box. The expansion Beamtracking ceiling microphone shall utilize a proprietary digital protocol via an RJ-45 connector for audio networking with a TCM-1 or TCM-1A Beamtracking ceiling microphone. The expansion Beamtracking ceiling microphone shall contain eight-element microphones, and shall provide three 120-degree zones for 360 degrees of coverage. The expansion Beamtracking ceiling microphone shall offer multidirectional beamforming and automatic signal tracking capabilities. The Beamtracking technology shall operate in conjunction with acoustic echo cancellation technology (AEC) in accordance with U.S. Patent 9659576. The signal processing of the expansion Beamtracking ceiling microphone shall be configurable via the Tesira design software, including but not limited to: signal routing and mixing, equalization, filtering, dynamics, and delay, as well as control, monitoring, and diagnostic tools. The expansion Beamtracking ceiling microphone shall offer simple installation and microphone height adjustment, and shall be mountable on a ceiling tile or in open-ceiling environments. The expansion Beamtracking ceiling microphone shall be suitable for use in air handling spaces in accordance with UL 2043, and shall provide a second RJ-45 connector to allow up to three microphones to be daisy-chained together. The expansion Beamtracking ceiling microphone shall be CE marked, UL listed, and compliant with the RoHS directive. Warranty shall be five years. The expansion Beamtracking ceiling microphone shall be Tesira TCM-1EX.

TESIRA TCM-1EX SPECIFICATIONS

PENDANT MICROPHONE

Microphone Technology:	8-Element Digital Array
Frequency Response (150 Hz - 16 kHz):	± 3dB
Polar Pattern:	Beamformed
Sensitivity (94dB SPL, 1kHz):	> 70dB
Maximum SPL (at 0.5% THD):	106dB
Dynamic Range (THD+N < 10%):	92 dB, A-Weighted
Indicators:	Mute Indicator (Green/Red LED)
Digital Interface:	Custom/Proprietary
Connector:	Custom 2-pin (cable length 10 feet [3 meters])
Overall Dimensions:	
Height:	2 inches (51 mm)
Width:	2.5 inches (63 mm)
Depth:	2.5 inches (63 mm)
Weight:	0.4 lbs (0.2 kg)

PLENUM BOX

Connectors:	Two RJ-45: one between TCM-1EX plenum box and TCM-1 or TCM-1A, the other between TCM-1EX plenum box and additional TCM-1EX plenum box; 2-pin 3.5 mm Phoenix connector to TCM-1EX microphone
Power:	Custom/Proprietary
Indicators:	Link Indicator (Green LED)
Digital Interface:	Custom/Proprietary
Max Distance Between Devices:	33 feet (10 meters) between TCM plenum boxes
Overall Dimensions:	
Height:	2 inches (51 mm)
Width:	4 inches (102 mm)
Depth:	5.25 inches (133 mm)
Weight:	0.8 lbs (0.4 kg)
Environmental:	
Ambient Operating Temperature Range:	32 - 104° F (0 - 40° C)
Humidity:	0-95% relative humidity (non-condensing)
Altitude:	0-10,000 ft (0-3000m) MSL
Compliance:	FCC Part 15B (USA) CE marked (Europe) UL and C-UL listed (USA and Canada) RoHS Directive (Europe) Evaluated to the requirements of UL 2043 and is suitable for use in air handling spaces