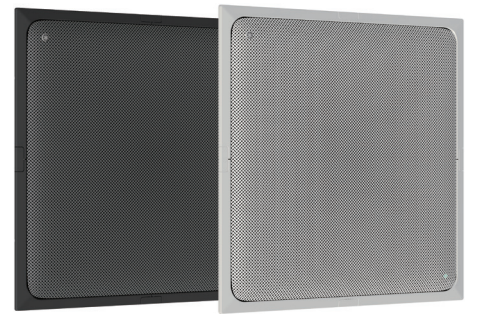# Overview

A ceiling array microphone equipped with unique audio signal processing technology that enables high-quality communication.

Features

- "Multi-beam Tracking" that scans for human voice and track simultaneous speech allowing for lively conversatiotns
- Customize "Tracking Area" for more accurate audio pick-up
- Utilizes innovative Yamaha technologies like Adaptive Echo Canceller, Auto Gain Control, Noise Reduction, and Dereverberation
- Automatic detection and configuration with Remote Conference Processor RM-CR
- Standard network audio support for "Dante"
- Utilizes one PoE+ network cable connection avoiding troublesome wiring and enabling audio control via Dante
- Supports 3 types of mounting methods for use with a variety of ceiling conditions

Specifications

General Specifications

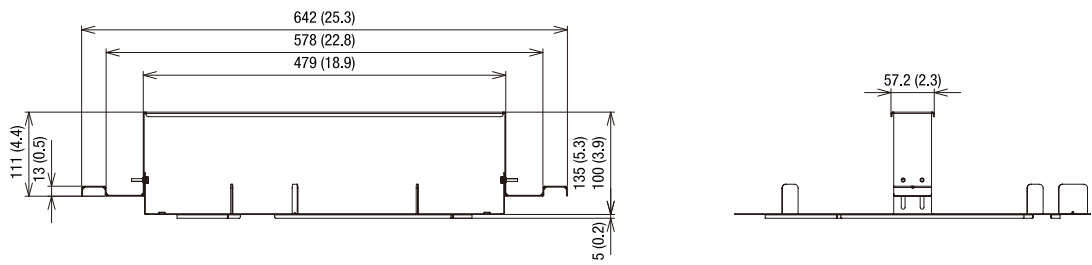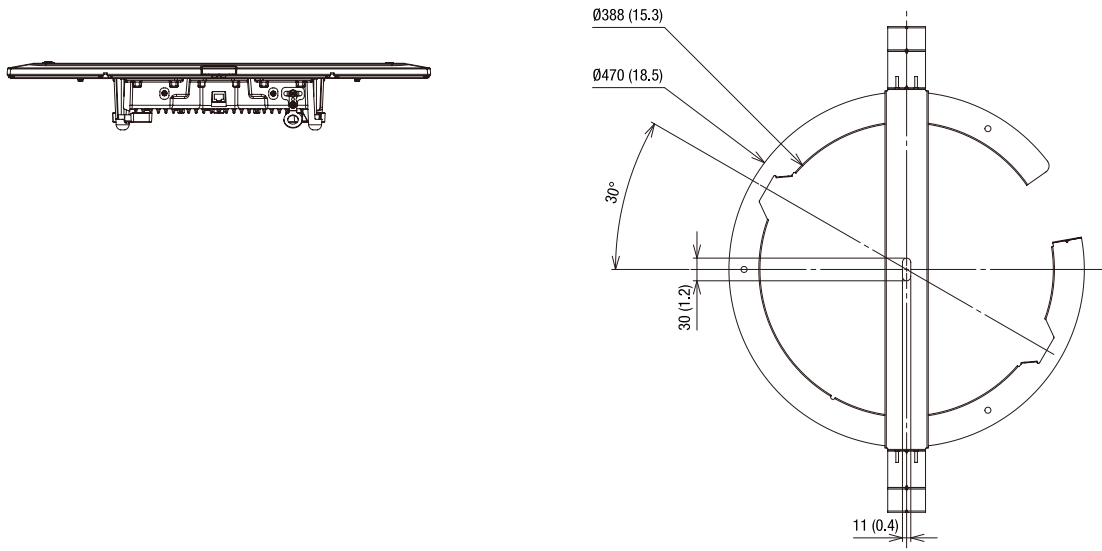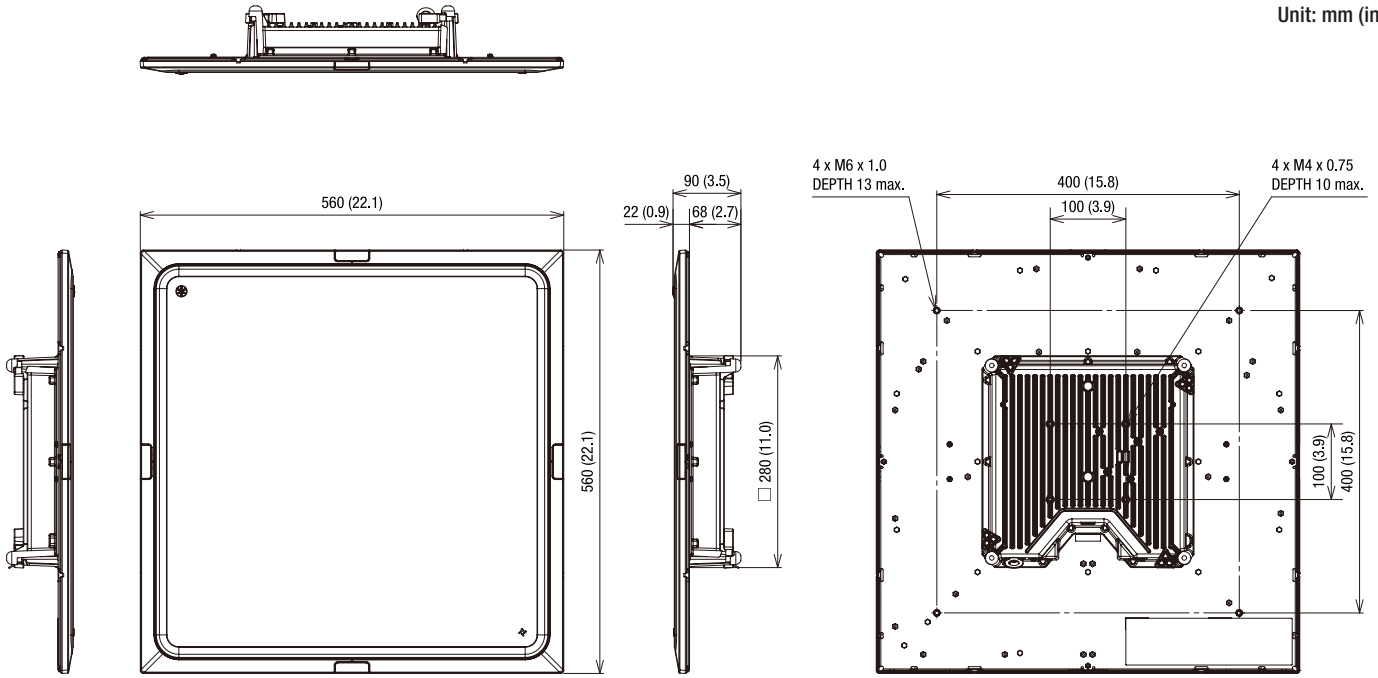|		
Description		Ceiling Array Microphone
Colour		Black, White
Dimensions (W x D x H)		560 mm x 560 mm x 90 mm (including protrusions/microphone panel: H22 mm)
Weight		5.6 kg
Power Requirements		PoE (IEEE 802.3af)
Maximum Power Consumption		7.2 W
In Operation	Temperature	0°C - 40°C
	Humidity	30% - 90% (no condensation)
Storage	Temperature	-20°C - 60°C
	Humidity	20% - 90% (no condensation)
Indicators		Front indicator (Mute/Unmute & Status), Network port indicator
Mount		Ceiling mount, Wire mount, VESA mount
Maximum Device Number with RM-CR		14 (without VXL1-16P, up to 16)
Accessories		Construction description, (Guarantee), Grille x 1, Screws for grille (M3 x 8 mm) x 5*, Screw cover x 4, Cutting template x 1, C ring x 1, Screws for C ring x 2, Hanger angle x 1, Screws for hanger angle (M4 x 20 mm) x 5*, Terminal cover x 1, Safety wire x 1, Binding band x 1, Clamp plate x 2 *Including a spare respectively
Dust Protection		IP5X for dust protection (with terminal cover)
Plenum Rating		UL2043 (with terminal cover)

Network Specifications

Ethernet	Dante, Remote Control, Web UI, PoE
Cable Requirements	CAT5e or higher (STP)

Audio Specifications

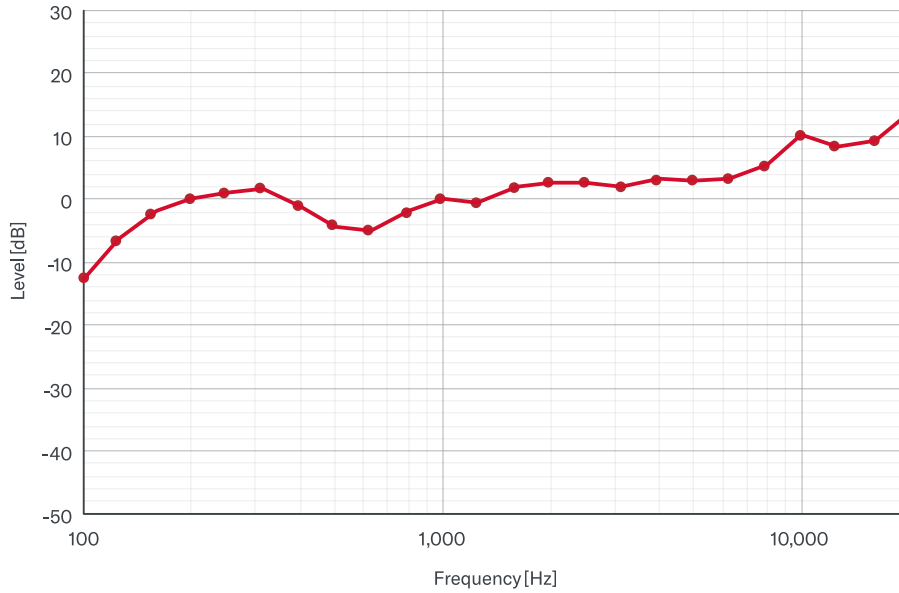|		
Frequency Response		160 Hz - 16 kHz (-10 dB)
Sampling Rate		48 kHz
Bit Depth		24 bit
Latency		22 ms (low-latency mode) 58 ms (including signal processing)
Audio I/O	Dante	1 in/2 out In1=AEC reference signal / Out1=output of beam mix, Out2= output of beam mix (simple processed)
Maximum Input Level of SPL (0 dBFS)		117.8 dB SPL
Self Noise		-0.8 dBA SPL
SNR (Ref. 94 dB SPL at 1 kHz)		94.8 dBA
Sensitivity		-23.8 dBFS/Pa
Dynamic Range		118.6 dBA
Signal Processing		Multi-beam Tracking, Adaptive Echo Canceller, Noise Reduction, Dereverberation, Auto Mixer, Auto Gain Control, Parametric EQ, Output Gain Adjustment

Dimensions

Unit: mm (inch)

4 x M6 x 1.0
DEPTH 13 max.

4 x M4 x 0.75
DEPTH 10 max.

560 (22.1)

560 (22.1)

90 (3.5)

22 (0.9) 68 (2.7)

□ 280 (11.0)

400 (15.8)

100 (3.9)

100 (3.9)

400 (15.8)

Ø388 (15.3)

Ø470 (18.5)

30°

30 (1.2)

11 (0.4)

642 (25.3)

578 (22.8)

479 (18.9)

111 (4.4)

13 (0.5)

135 (5.3)
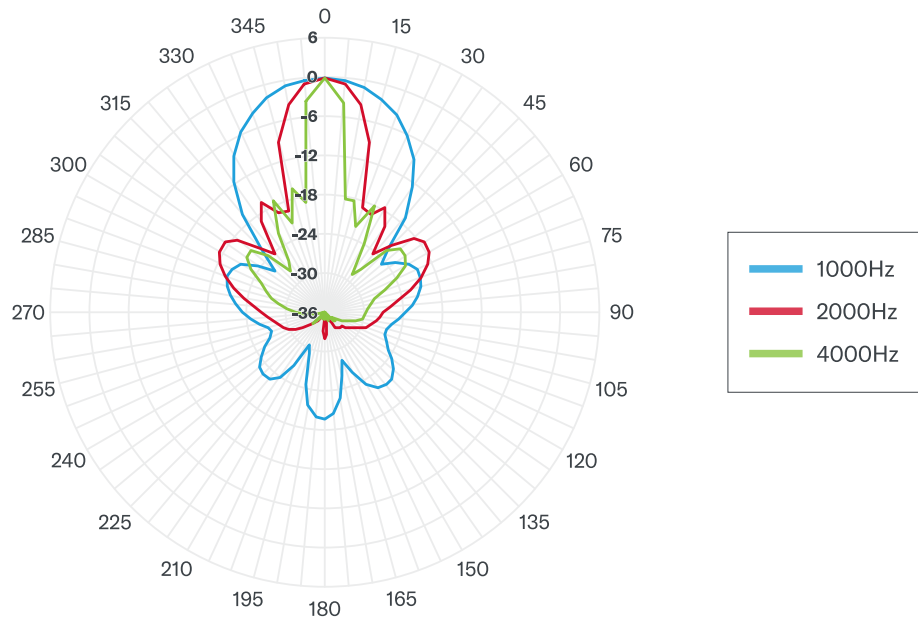
100 (3.9)

5 (0.2)

57.2 (2.3)

Architectural and Engineering Specifications

The solution shall be a beam-forming ceiling microphone. The ceiling microphone system shall be Dante enabled and PoE powered, requiring only one CAT5e or CAT6 cable for both power and data/audio transmission. The ceiling microphone shall deploy dynamic beam-forming technology. It shall support multi-beams to be able to capture several areas of the room simultaneously. The microphone beams shall be following active speakers when moving in the room. When a new person starts speaking either a pre-existing beam shall capture that person immediately, or a new beam shall form within milliseconds on that location. The ceiling microphone shall offer three options for installation. These options shall include methods to mount it flush below a ceiling tile, to mount it hanging from a ceiling using wires, and to mount it using a VESA mount. The ceiling microphone shall include audio post-processing. This shall include Adaptive Acoustic Echo Cancellation, Noise Reduction, Human Voice Activity Detection, Automatic Gain Control, Automatic mixing of audio signals, dereverberation, and others. The microphone shall offer different kinds of mixing technology, including "matrix mixing" and "gain-share mixing". The ceiling microphone shall provide an audio signal that was only post-processed using linear algorithms allowing for technology like speech recognition to use the signal without loss of performance. The product shall provide connectivity for third party control systems, allowing to manage system, microphone, and audio behavior from the room control system. The Yamaha RM-CG is specified.

Frequency Response

Directional Characteristics

Legend:
- 1000Hz
- 2000Hz
- 4000Hz

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