

#### **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 conversations
- 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   |
|----------------------------------|-------------|--|
| Description                      |             |  |
| 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), DC 48 V  |
| 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)  |
| Indicator                        |             | Front Indicator (Mute/Unmute & Status), Network Port Indicator   |
| Mount                            |             | Ceiling mount (can't replace a grid ceiling panel), Wire mount, VESA mount   |
| Maximum Device Number with RM-CR |             | 4 (Connection with other than RM-CR is not limited to this device)   |
| 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 2 0mm) 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**

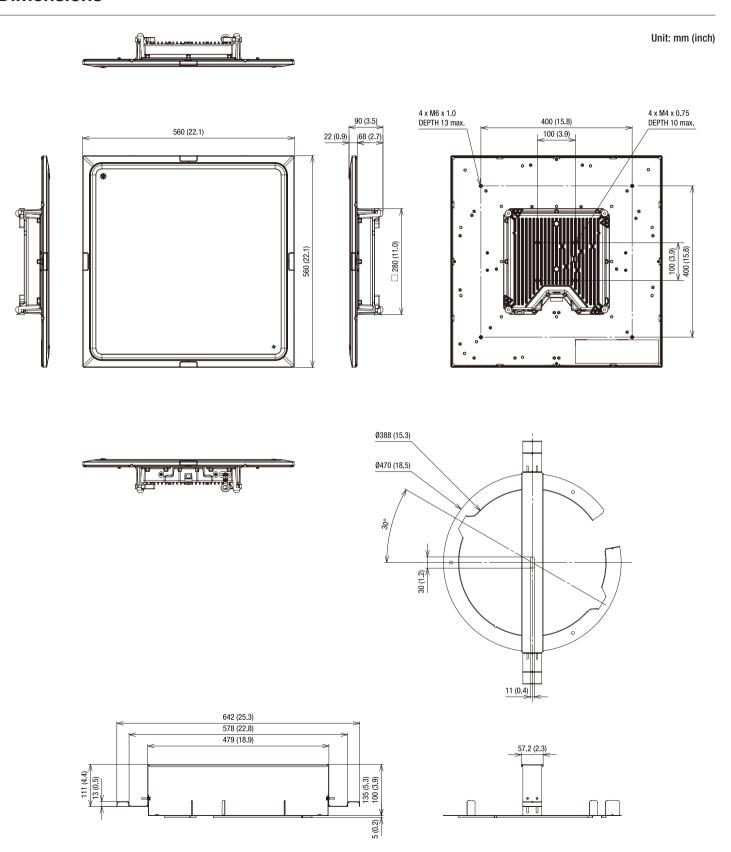
| Ethernet           | Dante, Remote Control, Web UI, PoE |
|--------------------|------------------------------------|
| Cable Requirements | CAT5e or higher (STP)              |

# **Audio Specifications**

| Frequency Response                  |       | 160 Hz - 16 kHz (-10 dB)  |
|-------------------------------------|-------|---|
| Sampling Rate                       |       | 48 kHz  |
| Bit Depth                           |       | 24 bit  |
| Latency                             |       | 58 ms (including signal processing)   |
| Audio I/O                           | Dante | 1 in x 2 out<br>In1=AEC reference signal / Out1=output of beam mix, Out2=<br>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,<br>Dereverberation, Auto Mixer, Auto Gain Control, Parametric EQ,<br>Output Gain |



# **Dimensions**



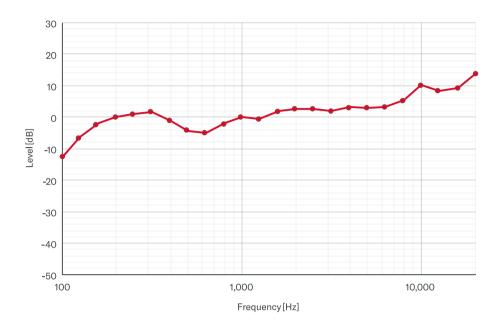


# **Architectural and Engineering Specifications**

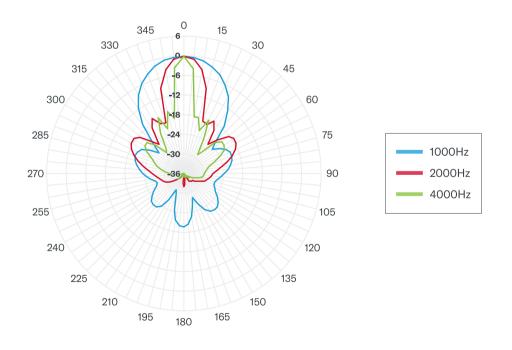
The solution shall be a beam-forming ceiling microphone. The ceiling microphone system shall be Dante enabled and PoE powered, requiring only one CAT5e or CAT6 cable for both power and data/audio transmission. The ceiling microphone shall deploy dynamic beam-forming technology. It shall support multi-beams 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**



#### YAMAHA CORPORATION