YAMAHA
Make Waves

**Complete and Customizable Communications Solutions**

ADECIA

"SOUND" ACCELERATES BUSINESS.

With new and ever-changing communication requirements, one thing remains the same: the need for high-quality, worry-free audio for collaboration. ADECIA helps organizations overcome challenges with implementation, configuration and room acoustics by providing all components required for a successful installation - designed to work seamlessly together to reduce set up time, costs and complexities.

Ceiling Array Microphone
RM-CG
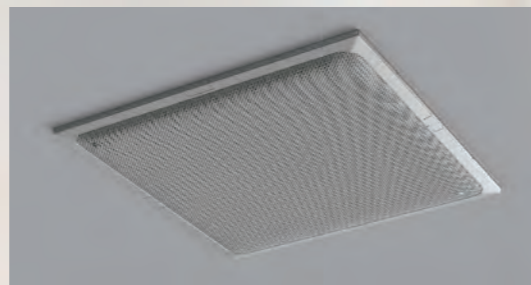
Tabletop Array Microphone
RM-TT

Remote Conference Processor
RM-CR

Complete Coverage from Sound Input to Output

ADECIA helps organizations overcome challenges with implementation, configuration and room acoustics by providing all components required for a successful installation - designed to work seamlessly together to reduce set up time, costs and complexities.

Reduce Time, Spend and Complexities

Audio/control signals can be transmitted with one network cable using audio network standard, "Dante", solving troublesome wiring and installation problems.

Natural and Comfortable Conversation Experiences

Each microphone is equipped with various processing functions and when combining with Yamaha's original voice processing technology "HVAD", it provides a smooth and stress-free remote conference conversation experience. HVAD (Human Voice Activity Detection) is Yamaha's technology to distinguish human voice from background noises. HVAD captures human voices and suppresses background noises, delivering a clear signal to the far end no matter where you meet.

Best Audio in Shortest Time

System automatically detects all components and configures them to be optimized for the room environment, taking into consideration location of speakers and microphones, reverberation characteristics of the room, and echo behavior. Setting up a room can be as easy as following the configurator through four steps of configuration.

Customization Options to Fit Your Use Case

By offering a wide range of variations such as ceiling array microphones, and tabletop array microphones, ADECIA meets demands of different audio systems for each conference space and provides operations suitable for various environments.

## Integration into All Audio Environments

Equipped with various interfaces such as USB, Bluetooth®, SIP, and analog audio input/output terminals, the system allows the flexibility to use for both web conference system and telephone line conferences. Supporting Windows, macOS, iOS and Android, as well as compliance with market leading UC applications, ADECIA gives you the flexibility to customize the solution to your specific needs.

System Examples

RM-CG System Example

RM-TT System Example

LAN (Dante)	USB
LAN (Network)	Analog
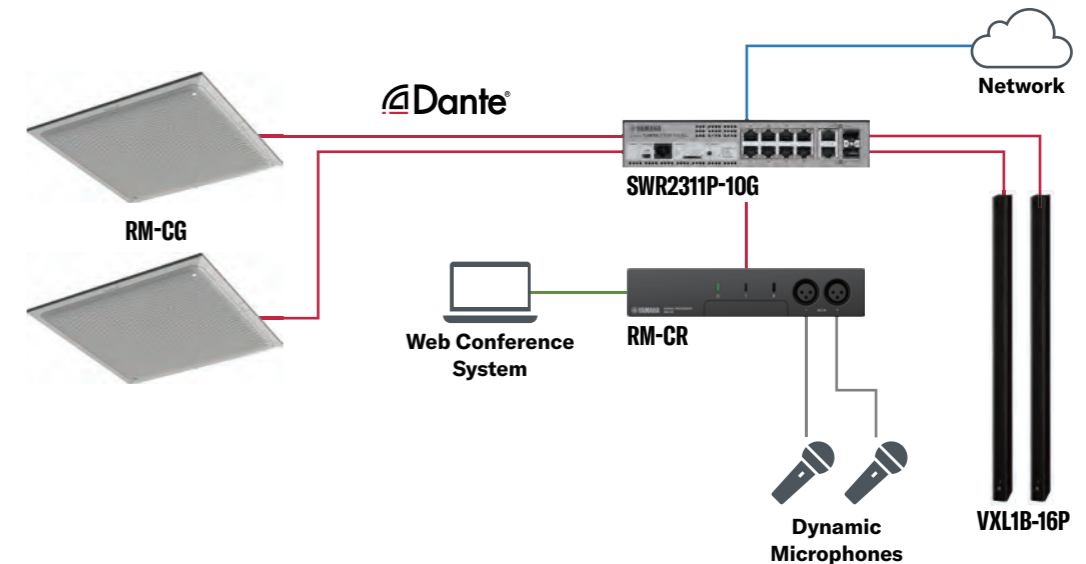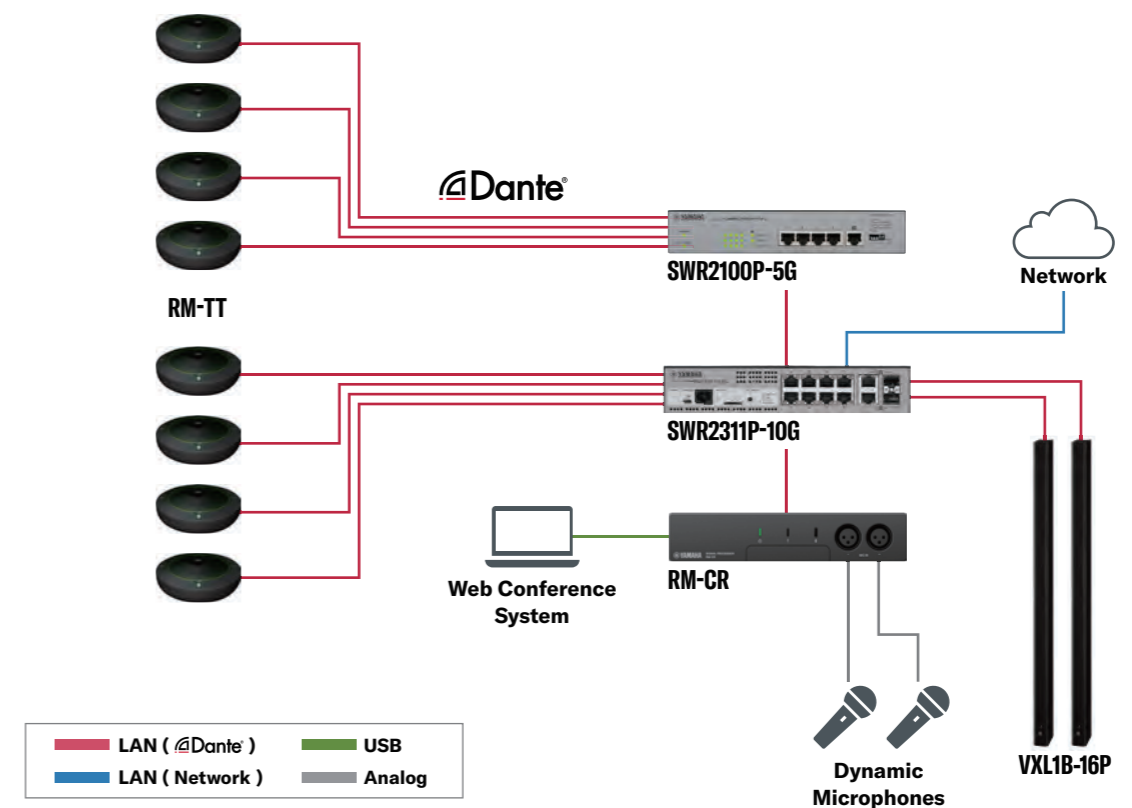
Sound Processing for High Quality Remote Conferencing Experience

Multi-beam Tracking (RM-CG)

Multi-beam Tracking is a signal processing technology that can track multiple speaking participants by combining the use of beamforming technology to form directivity with multiple microphone elements to pick up sound. With multiple beams, each beam tracks different speakers' voices when multiple speakers are present.
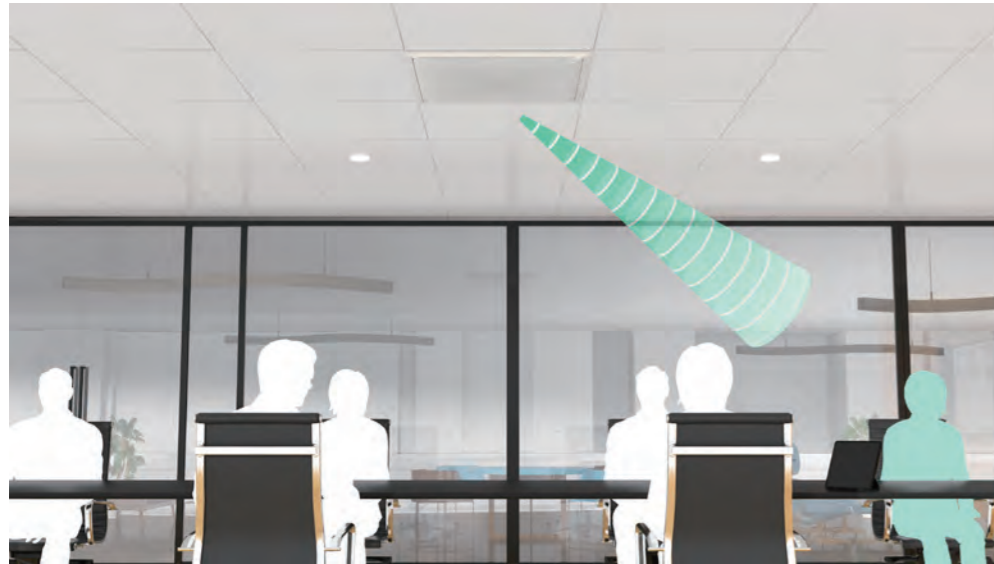
Auto Voice Tracking (RM-TT)

The RM-TT is equipped with Auto Voice Tracking (automatic speaker tracking function) in each microphone, allowing for flexible room layout and participant positioning. RM-CR automatically selects the closest microphone to the speaker to pick up sound, enabling a highly clear voice to the far end.

Unique Yamaha Processing Technologies

Yamaha's unique HVAD technology distinguishes the human voice vs. noise to block unneeded sound from being sent to the far-end.

1 ADAPTIVE ECHO CANCELLER

While other echo canceller's measure the room and set levels once, Yamaha's adaptive echo cancellation is constantly scanning the environment for changes to deliver an uninterrupted, echo-free audio stream.

2 AUTO GAIN CONTROL

This sound technology automatically adjusts voice levels to deliver a consistent, optimal volume level to the far-end, no matter if some voices are louder vs. weaker or closer vs. further away from the microphone. This automatic feature enables everyone to hear or be heard at an ideal level.

3 NOISE REDUCTION

When constant noise like a projector fan or air conditioner system enters the communication space, Yamaha's Noise Reduction technology removes these components to clearly convey the presenter's audio to the far-end.
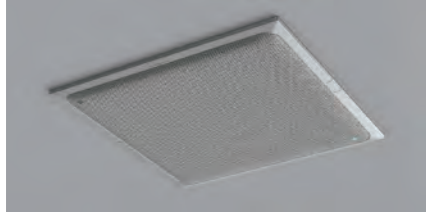
4 DEREVERBERATION

Reverberation from an acoustically-poor environment can make it difficult to distinguish a clear voice signal. Dereverberation suppresses these reverb components to deliver a highly-intelligible output.
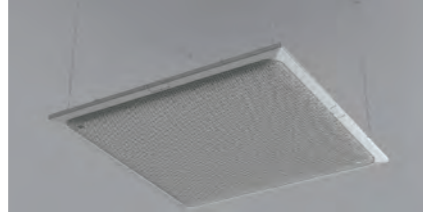
Various Mounting Methods to Best Fit Your Usage

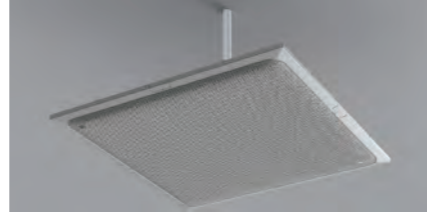## Ceiling Array Microphone RM-CG Installation

Ceiling Mount

Wire Mount

VESA Mount

Tabletop Array Microphone RM-TT Mount

## Remote Conference Processor RM-CR Installation

Rack Mount

Table Mount

Setup Wizard

Quick Setup (RM-CR)

Follow the setup wizard on your web browser and with just a few clicks it will automatically adjust the audio according to your system's audio routing and room environment.

1 Welcome

2 Auto Device Detection

3 Speaker Setting

4 Auto Tuning

5 Done

Well Done!

1. WELCOME
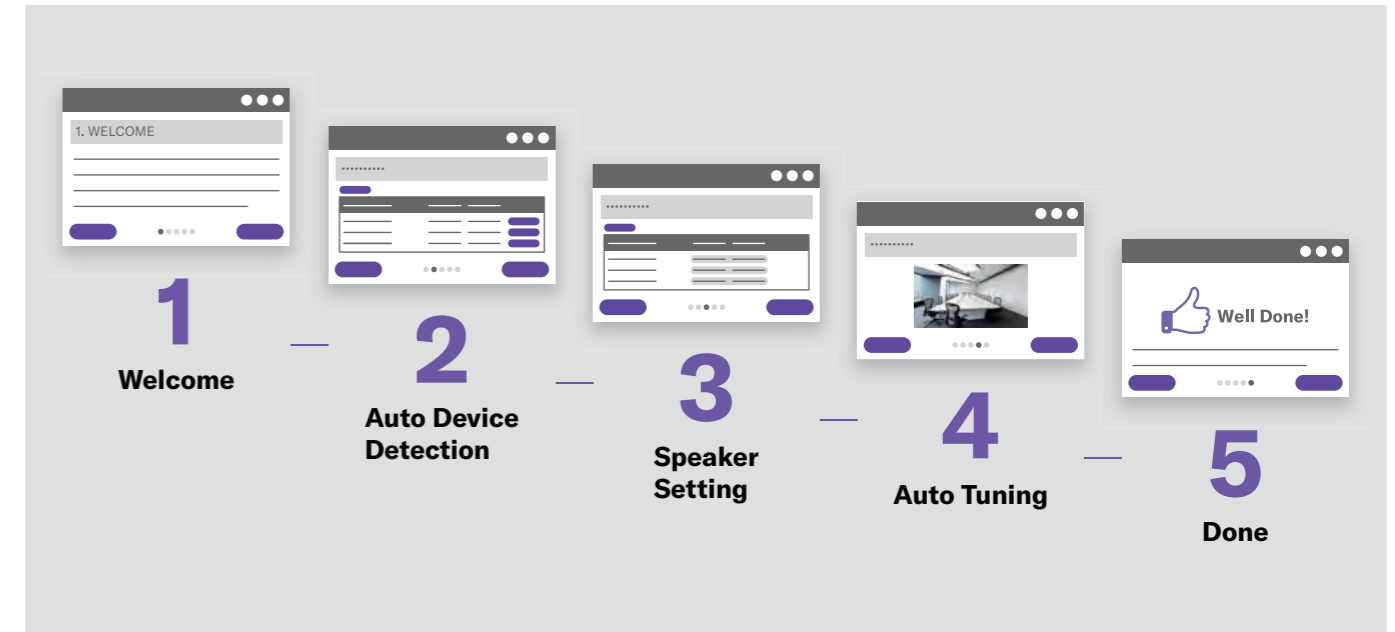
DSP Setting List (RM-CG)

Following items are able to customize.

DSP	Settings
Adaptive Echo Canceller	Off
	Gentle
	Medium (Default)
	Strong
Noise Reduction	Off
	Gentle
	Medium (Default)
	Strong
Dereverberation	Off
	Gentle
	Medium (Default)
	Strong

DSP	Settings
AGC: Type	Off
	Soft (Default)
	Hard
AGC: Speed	Slow (Default)
	Fast
Auto Mixing	1Ch Gating
	2Ch Gainsharing (Default)
	4Ch Gainsharing
	4Ch Mixing
Beam Tracking: Speed	Fast (Default)
	Slow
Beam Tracking: Area Limitation	Disable (Default)
	Enable

Flexible Application Support

RM-CG

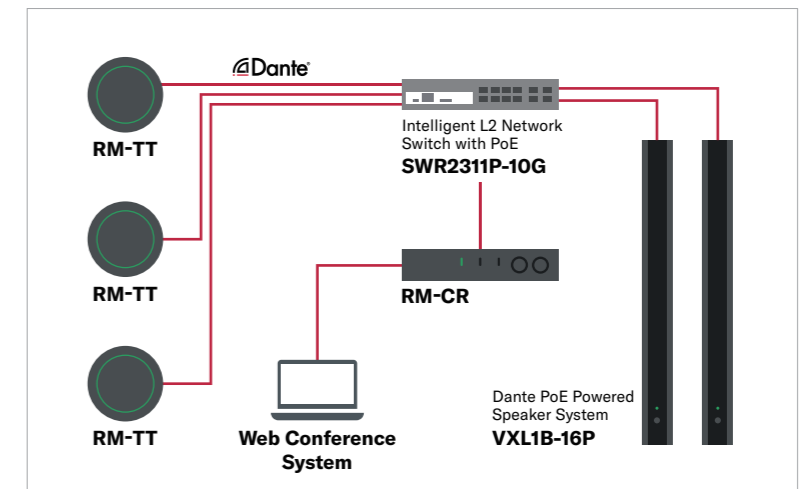With a simple and sophisticated design, the unit blends into high-end spaces and enables a clean and clear table.

RM-CG

Dante

Intelligent L2 Network
Switch with PoE
SWR2311P-10G

RM-CR

**Web Conference
System**

Dante PoE Powered
Speaker System
VXL1B-16P
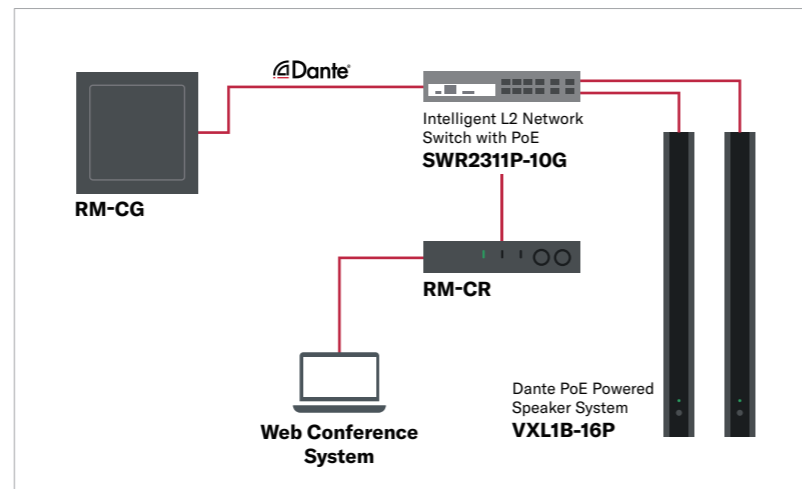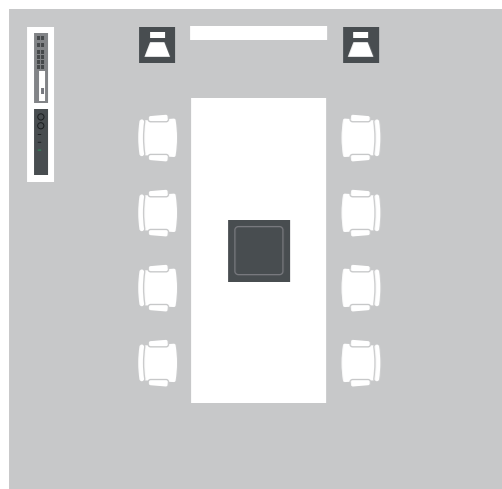
RM-TT

Scale and expand your coverage with the ability to increase the number of microphones used to fit your participant count. Up to 8 microphone pods (4 mics per pod) simply connect to the PoE switch.

RM-TT

RM-TT

RM-TT

Dante

Intelligent L2 Network
Switch with PoE
SWR2311P-10G

RM-CR

**Web Conference
System**

Dante PoE Powered
Speaker System
VXL1B-16P
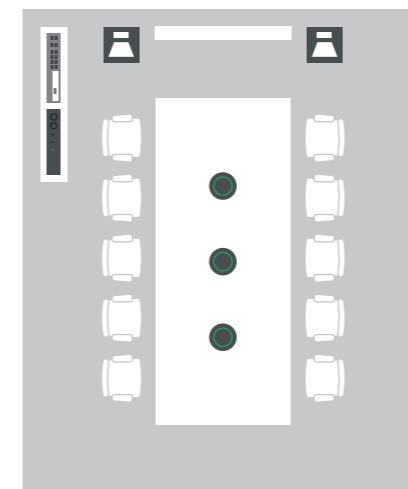
Customization

The new Yamaha microphone components (Ceiling Array Microphone RM-CG and Tabletop Array Microphone RM-TT) can also be integrated with other Yamaha or third party components for required solutions with the open API interface.

* ProVisionaire or RM Device Finder may be required, please refer to the reference guide for details.

・ ProVisionaire: customizable control panel software for Yamaha PA systems
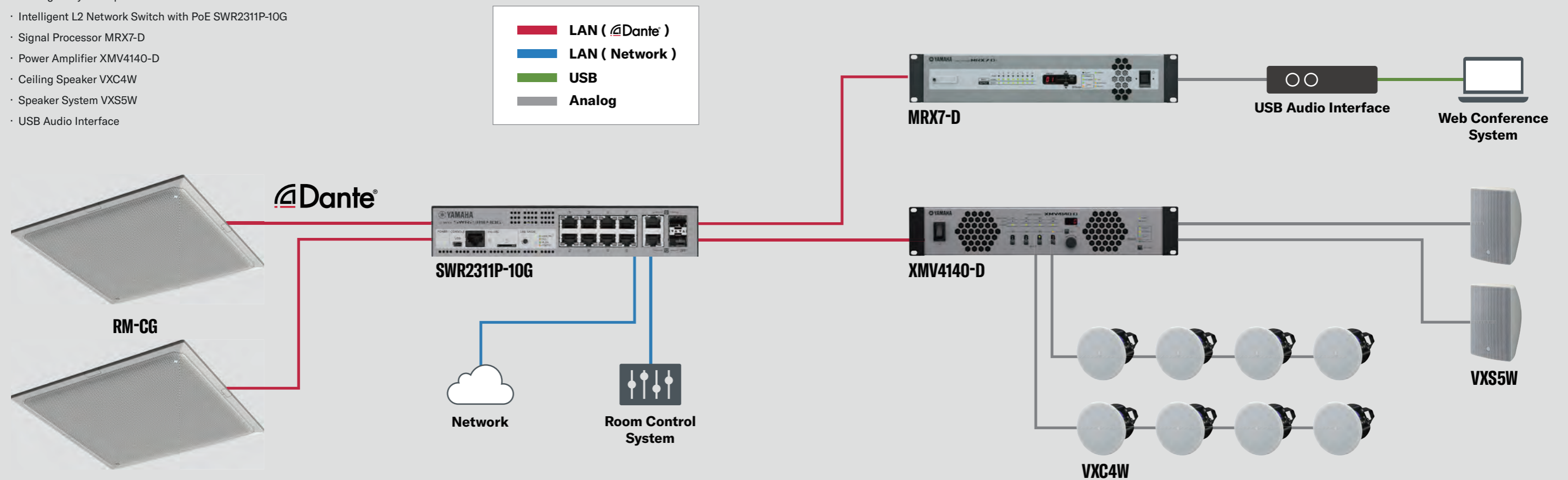・ RM Device Finder: application software for setting parameters of RM-CG

Customization Options

・ Expand the number of microphone connections
・ Expand peripheral devices/systems (amplifiers/speakers)

RM-CG System Example

Yamaha Customized Configuration Example

・ Ceiling Array Microphone RM-CG
・ Intelligent L2 Network Switch with PoE SWR2311P-10G
・ Signal Processor MRX7-D
・ Power Amplifier XMV4140-D
・ Ceiling Speaker VXC4W
・ Speaker System VXS5W
・ USB Audio Interface

▬	**LAN (*Dante*)**
▬	**LAN (Network)**
▬	**USB**
▬	**Analog**

Dante

RM-CG

SWR2311P-10G

Network

Room Control System

MRX7-D

USB Audio Interface

Web Conference System

XMV4140-D

VXC4W

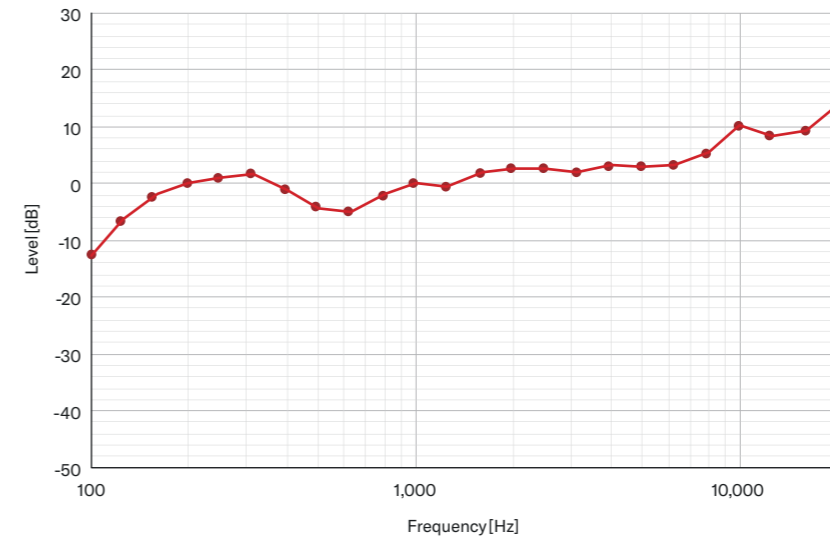**VXS5W**

Ceiling Array Microphone RM-CG

Ceiling Array Microphone
RM-CG

A ceiling array microphone equipped with unique audio signal processing technology that enables high-quality communication
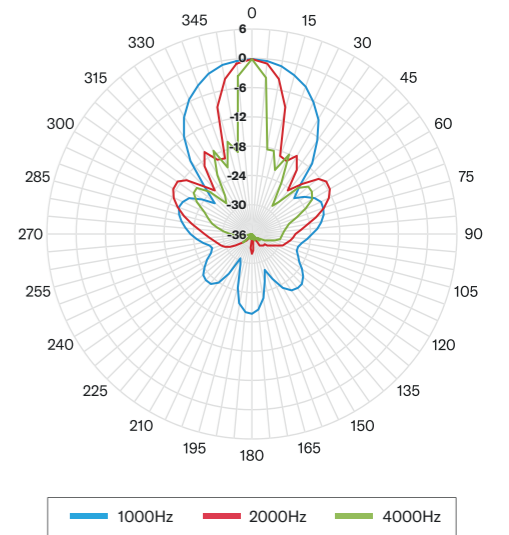
- "Multi-beam Tracking" that scans for human voice and tracks simultaneous speech allowing for lively conversations
- Utilizes innovative Yamaha technologies like Adaptive Echo Canceller, Auto Gain Control, Noise Reduction, and Dereverberation
- Automatic detection and configuration with Remote Conference Processor RM-CR
- Standard network audio support for "Dante"
- Utilizes one PoE+ network cable connection avoiding troublesome wiring and enabling audio control via Dante
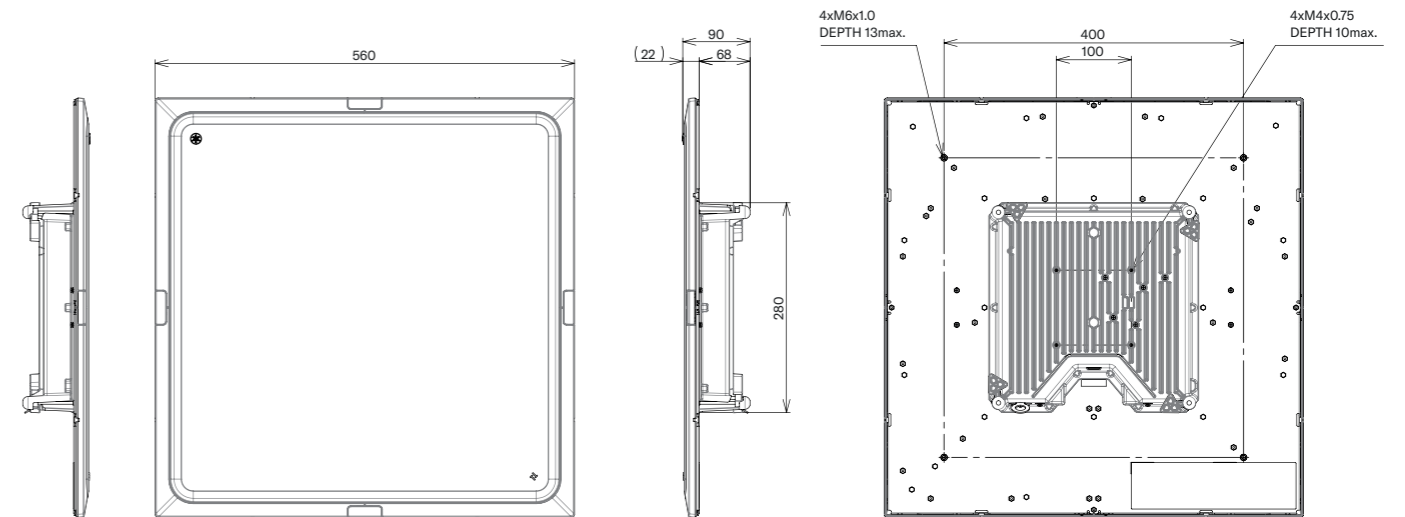- Supports 3 types of mounting methods for use with a variety of ceiling conditions

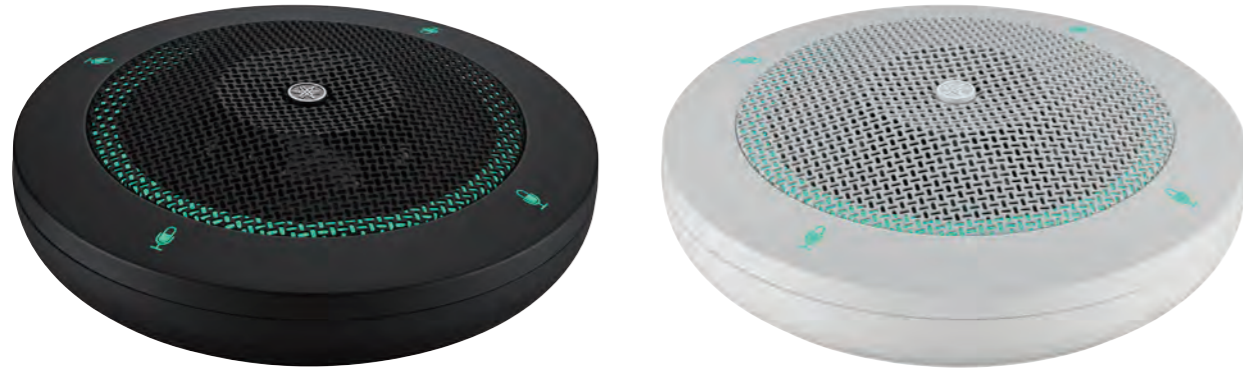## Frequency Response

Directional Characteristics

| | 1000Hz | 2000Hz | 4000Hz |

External View

4xM6x1.0
DEPTH 13max.

4xM4x0.75
DEPTH 10max.

560

90

68

22

400

100

280

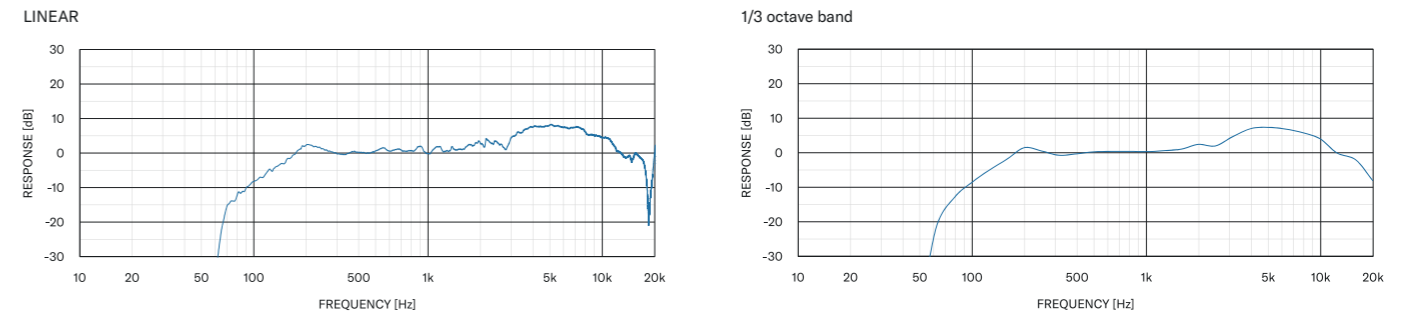Unit: mm

Tabletop Array Microphone RM-TT

Tabletop Array Microphone
RM-TT

Tabletop array microphones provide a comfortable sound environment with no configuration needed

- Auto Voice Tracking allows for flexible room layout and participant positioning
- 6 types of microphone directivity to choose from, depending on the number of participants and meeting style
- Achieves comfortable sound quality by making full use of Adaptive Echo Canceller, Auto Gain Control, Noise Reduction, and Dereverberation
- When using Auto Voice Tracking, RM-CR automatically selects the microphone that is the nearest to speaker to pick up sound
- Standard network audio support for "Dante"
- Utilizes one PoE+ network cable connection avoiding troublesome wiring and enabling audio control via Dante
- With an accessory, microphones can be fixed on tables

Frequency Response

LINEAR

1/3 octave band

Directional Characteristics

1000Hz
2000Hz
4000Hz

Cardioid

Hyper-cardioid

Super-cardioid

Omnidirection

Bidirection

Troid (Horizontal)

External View

Unit: mm

Remote Conference Processor RM-CR

Remote Conference Processor

RM-CR

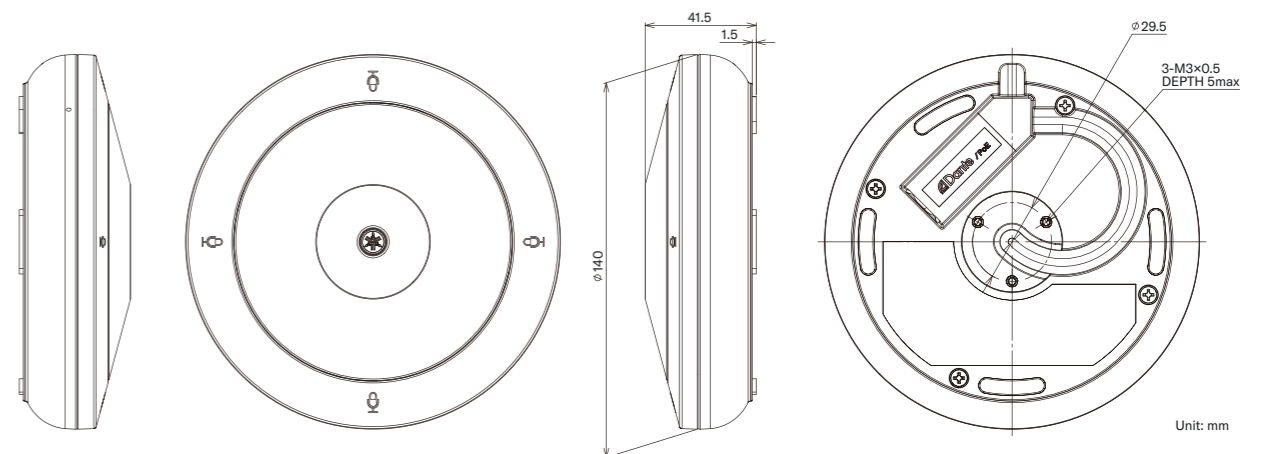## Signal processor at the heart of the ADECIA

· Up to 2 RM-CG or 8 RM-TT, and 2 VXL1-16P can be connected via PoE switch

· Automatically recognizes connected devices on the same network for audio routing

· Equipped with the Auto Tuning functions that automatically measure and provide the optimum sound settings for the environment

· Equipped with the Auto Mixer functions that automatically optimizes the mixing balance of audio input via Dante

· Equipped with various input/output connections such as USB, VoIP, analog audio, and Bluetooth

· Standard network audio support for "Dante"; all compatible devices can be connected with single network cable

Connections

Audio Input/Output (USB)   SIP

AUX Input/Output (RCA)   Speaker Output (RCA)   Dante/PoE

Bluetooth   Microphone Input (XLR)
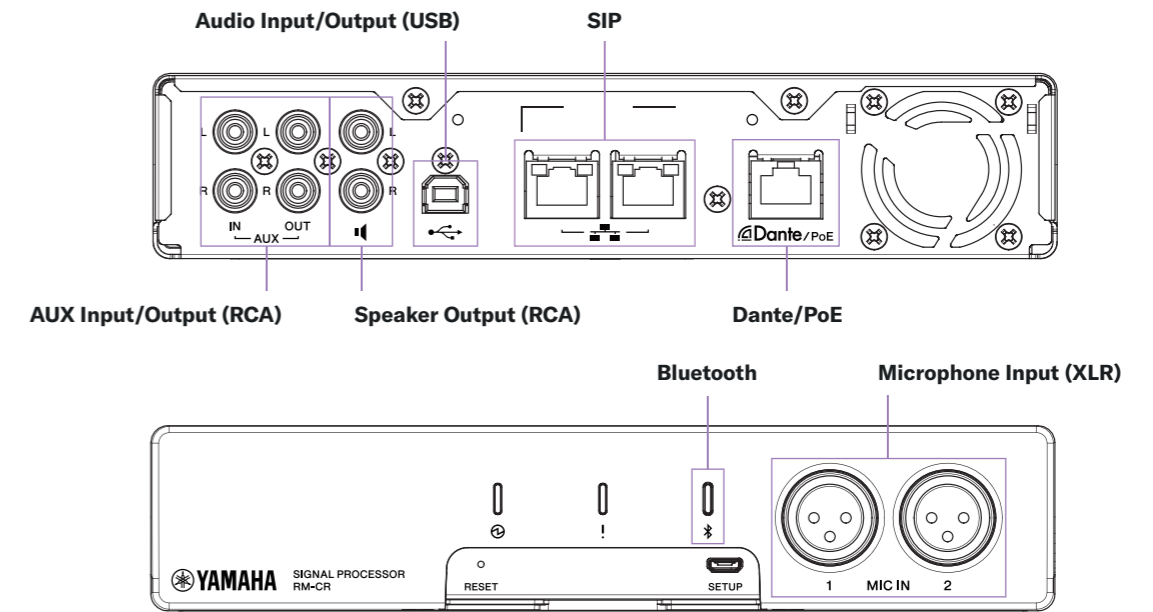
External View
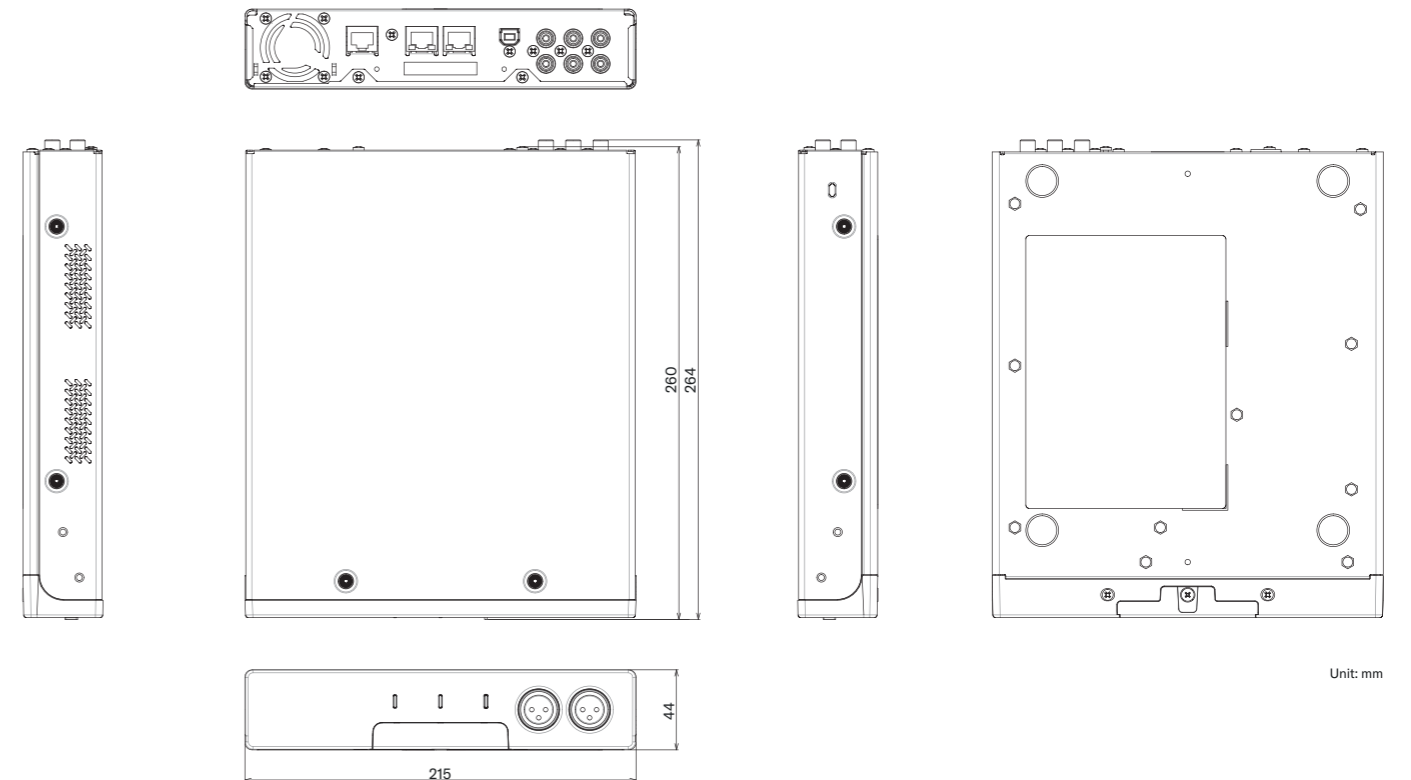
Unit: mm

Specifications

RM-CG Specifications

General		
Dimensions		560 (W) x 90 (H) x 560 (D) mm (includes protrusion/microphone panel: 22mm)
Weight		5.6kg
Power Requirements		PoE (IEEE 802.3af)
Maximum Power Consumption		7.2W
Connector		RJ45
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, Wire mount, VESA mount
Maximum Device Number with RM-CR		2
Accessories (* Including a spare respectively)		Construction description, (Guarantee), Grille x 1, Screws for grille (M3 x 8mm) 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 20mm) x 5*, Terminal cover x 1, Safety wire x 1, Binding band x 1, Clamp plate x 2
Dust Protection		IP5X for dust protection (with terminal cover)
Plenum Rating		UL2043 (with terminal cover)

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

Audio		
Audio I/O	Dante	1in/2out
Sampling Rate		48kHz
Bit Depth		24bit
Latency		58ms (including signal processing)
Frequency Response		160Hz – 16kHz (-10dB)
Maximum Input Level of SPL (0dBFS)		117.8dB SPL
Self Noise		-0.8dBA SPL
SN Ratio (Ref. 94dB SPL at 1kHz)		94.8dBA
Sensitivity		-23.8dBFS/Pa
Dynamic Range		118.6dBA
Signal Processing		Multi-beam Tracking, Adaptive Echo Canceller, Noise Reduction, Dereverberation, Auto Mixer, Auto Gain Control, Parametric EQ, Output Gain

RM-TT Specifications

General		
Dimensions		140 (W) × 41.5 (H) × 140 (D) mm
Weight		310g
Power Requirements		PoE (IEEE 802.3af)
Maximum Power Consumption		4.5W
Connector		RJ45
In Operation	Temperature	0°C - 40°C
	Humidity	30% - 90% (no condensation)
Storage	Temperature	-20°C - 60°C
	Humidity	20% - 90% (no condensation)
Indicator		Mute indicator (Mute/Unmute), Status indicator, Network port indicator
Maximum Device Number with RM-CR		8
Accessories		Installation manual, Tabletop mounting adapter, Screw for mounting x 3, Spacer x 3

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

Audio		
Audio I/O	Dante	1in/2out
Sampling Rate		48kHz
Bit Depth		24bit
Latency		57ms (including signal processing)
Frequency Response		160Hz - 16kHz (-10dB)
Maximum Input Level of SPL (0dBFS)		106.8dB SPL
Self Noise		6.3dBA SPL
SN Ratio (Ref. 94dB SPL at 1kHz)		87.7dBA
Sensitivity		-12.8dBFS/Pa
Dynamic Range		100.5dBA
Signal Processing		Auto Voice Tracking, Selectable Polar Pattern (Cardioid, Hyper-cardioid, Super-cardioid, Omnidirectional, Bidirectional, Troid), Adaptive Echo Canceller, Noise Reduction, Dereverberation, Auto Mixer, Auto Gain Control, Parametric EQ, Output Gain

RM-CR Specifications

General		
Dimensions		215 (W) x 44 (H) x 260 (D) mm
Weight		1.6kg
Power Requirements		PoE+ (IEEE 802.3at, LLDP), DC 48V
Maximum Power Consumption		15.0W
In Operation	Temperature	0°C - 40°C
	Humidity	30% - 90% (no condensation)
Storage	Temperature	-20°C - 60°C
	Humidity	20% - 90% (no condensation)
Indicator		Power indicator, Status indicator, Bluetooth indicator, Network port indicator x 3
Accessories		Installation manual, USB Cable (A-B) 5m (16.4ft), USB Cable (A-microB) 1m (3.3ft), Rubber foot x 4, Access panel
Options		Rack Mount Kit RM-MTL, Table Mount Kit RM-MRK

Network		
Ether1		Dante, Remote Control, Web UI, PoE+
Ether2/Ether3		Corporate Network, Remote Control, SIP, Web UI
USB Network (Front)		USB2.0, Network Class, Web UI, Fixed IP
Cable Requirements		Ethernet1/2/3: CAT5e or higher (STP) USB Network : USB Cable (A-microB)

Audio		
Audio I/O	Dante	16in/16out
	USB	USB2.0, Audio Class 1.0, Input: 2ch, Output: 2ch @48kHz
	Microphone Input	XLR Balanced, Input: 2ch
	AUX	RCA Unbalanced (Line Level), Input: 2ch, Output: 2ch
	Speaker Out	RCA Unbalanced (Line Level), Output: 2ch

General		
Audio I/O	Bluetooth	Version 4.2
		Supported Profiles: HFP (1.6), A2DP, AVRCP
		Supported Codec: CVSD, SBC, mSBC
		Wireless Output: Class2
		Maximum Communication Distance: 10m (32.8ft) (no obstacles)
		Radio Frequency (Operational Frequency): 2,402MHz - 2,480MHz
		Maximum Output Power (EIRP): 4.0dBm (2.5mW)
	SIP	Call Handling: Dial, Answer, Hold, Resume, Forwarding, Do not disturb, Redial, Call timer, Call ID, Voice mail notifications (switch configured)
		Call Bridging: Supports bridging SIP, USB, BT and AUX calls. Join, Split, Hold, Resume, 5+1 lines: up to 2 SIP calls, 1 USB call, 1 Bluetooth call, 1 AUX, Plus the user
		Codecs: G.711, G.722HD, G.729ab, G.726
		DTMF Support: RTP event, SIP in-band, SIP info package
		Security: SRTP support (RFC 1889), IETF SIP support (RFC 3261 and companion RFCs)
Sampling Rate		48kHz
Bit Depth		24bit
Latency		8ms (Dante In to USB Out, includes signal processing)
Frequency Response		20Hz - 20kHz

RM-CR Analog Input Characteristics

Input Terminal	Input Level		Connector
	Nominal	Max. before Clip	
MIC IN 1/2	-46dBu	-26dBu	XLR-3-31 (Balanced)
AUX IN L/R	-14dBV	+6dBV	RCA Pin

RM-CR Analog Output Characteristics

Output Terminal	Source Impedance	For Use with Nominal	Output Level		Connector
			Nominal	Max. before Clip	
AUX OUT L/R	1kΩ	10kΩ	-14dBV	+6dBV	RCA Pin
SP OUT L/R	1kΩ	10kΩ	-14dBV	+6dBV	RCA Pin

Accessories/Options

Rack Mount Kit
RM-MRK

Mount kit for mounting the Remote Conference Processor RM-CR in a 19-inch rack (EIA standard).

Table Mount Kit
RM-MTL

Mount kit for mounting the Remote Conference Processor RM-CR on the table.

Intelligent L2 Network Switch with PoE
SWR2311P-10G

An intelligent L2 switch that has the optimal functions for Dante and can supply PoE to connected devices.
Maximum 30W can be supplied from each PoE-compliant port (240W in total).

Simple L2 Network Switch with PoE
SWR2100-10G
SWR2100-5G

A simple L2 switch that has the optimal functions for Dante and can supply PoE to connected devices.
SWR2100-10G has 9 ports available for PoE power supply and can supply maximum 30W per port (70W in total).
SWR2100-5G has 4 ports available for PoE power supply and can supply maximum 30W per port (70W in total).

Dante PoE Powered Speaker System
VXL1B-16P (Black)
VXL1W-16P (White)

A Dante powered speaker by PoE power supply.

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YAMAHA CORPORATION

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