



# RM Series Wireless Microphone System

## Reference Manual

Microphone Access Point

### RM-WAP-16 RM-WAP-8

Wireless Microphone

### RM-WOM RM-WDR RM-WGL RM-WGS

Microphone Charger

### RM-WCH-8

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### Information

- The illustrations and images shown in this manual are for instructional purposes only.
- The company names and product names in this manual are trademarks or registered trademarks of their respective companies.
- We are continuously improving the software for our products. The latest version can be downloaded from the Yamaha website.

- This document is based on the latest specifications at the time of publication. The latest version can be downloaded from the Yamaha website.
- Reproduction of this manual in whole or in part without permission is prohibited.
- In this manual, the microphone access point is referred to as “access point”, the wireless microphone is referred to as “microphone”, and the microphone charger is referred to as “charger”.

## INTRODUCTION

Thank you for purchasing these Yamaha RM series wireless microphone system products.

These products, which include a wireless microphone, access point, battery, charger, etc., are part of the ADECIA wireless solution.

For correct and safe use of this unit, be sure to first read this manual carefully together with the Owner’s Manual included with each product.

### Available utility software

This utility software can be used to set up this unit according to its use and environment.

- |   |   |
|---|---|
| <input type="checkbox"/> <b>Web GUI “RM-WAP Device Manager”</b> | This allows you to use a computer browser to configure and operate this unit.   |
| <input type="checkbox"/> <b>RM Device Finder</b>                | This is application software for controlling ADECIA devices on the network. It detects the ADECIA devices on the network and displays the Device Manager for each device. |
| <input type="checkbox"/> <b>ProVisionaire Design</b>            | This is Windows application software for designing and managing an entire sound system made up of a combination of various devices.                                       |
| <input type="checkbox"/> <b>ProVisionaire Control</b>           | This is Windows application software that allows you to remotely control parameters for various devices from a single control panel.                                      |
| <input type="checkbox"/> <b>ProVisionaire Touch</b>             | This is iPad application software that allows you to remotely control parameters for various devices from a single control panel.   |

### Available manuals

This describes the manuals related to this product.

- |  |   |
|--|---|
| <input type="checkbox"/> <b>RM-WAP Owner’s Manual (included)</b>   | This contains the precautions for using this unit safely as well as the installation procedure.                               |
| <input type="checkbox"/> <b>RM-WOM Owner’s Manual (included)</b>   |   |
| <input type="checkbox"/> <b>RM-WCH Owner’s Manual (included)</b>   |   |
| <input type="checkbox"/> <b>RM-WBT Owner’s Manual (included)</b>   |   |
| <input checked="" type="checkbox"/> <b>RM Series Wireless Microphone System Reference Manual (this manual/PDF)</b> | This provides details on connecting and using this unit.  |
| <input type="checkbox"/> <b>RM Series Wireless Microphone System Web GUI Device Manager Operation Guide</b>        | This provides details on the Web GUI Device Manager, which allows you use your computer to configure and operate this unit.   |
| <input type="checkbox"/> <b>RM Series Remote Control Protocol Specifications</b>                                   | This provides details on command information for acquiring and controlling information about this unit from external devices. |
| <input type="checkbox"/> <b>ProVisionaire Design User Guide</b>  | This provides details on using ProVisionaire Design.  |
| <input type="checkbox"/> <b>ProVisionaire Control Setup Guide</b>  | This provides details on using ProVisionaire Control.   |

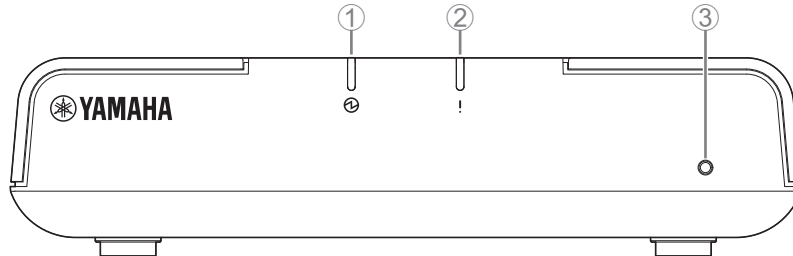
Software and manuals related to this product can be downloaded from the following website.

▼ **Yamaha website (Downloads)**  
<https://download.yamaha.com/>

# CONTROLS AND FUNCTIONS

## RM-WAP-16 RM-WAP-8

### [Front panel]



#### ① Power indicator

Condition	Power indicator	Unit status
LAN cable plugged into Dante/PoE port	Lit green	Operating
–	Flashes red quickly	System error occurring

#### ② Status indicator

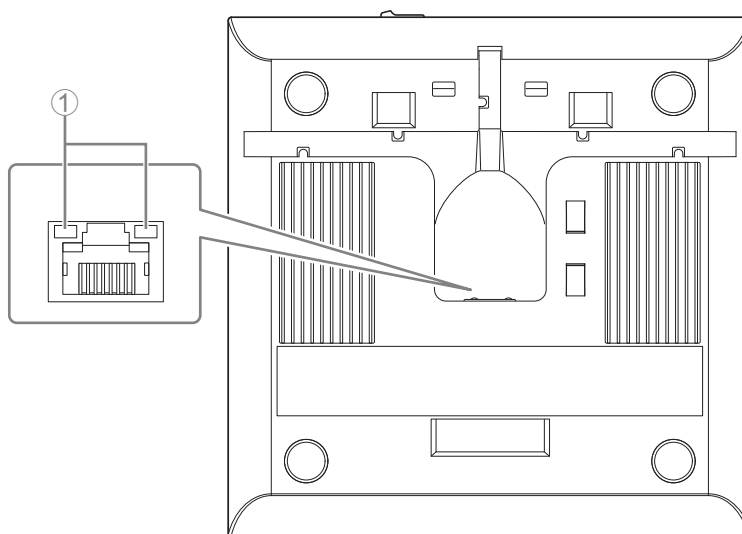
Condition	Status indicator	Unit status
Pairing using Web GUI	Flashes blue quickly	Waiting for pairing/Pairing
Pairing using Web GUI	(After flashing blue quickly) Flashes blue twice	Paired successfully
Pairing using Web GUI	(After flashing blue quickly) Flashes red twice	Pairing failed
Identify icon in Web GUI clicked	Flashes white	Responding (to Identify function)
Updating firmware	Flashes white quickly	Firmware being updated
Updating firmware	(After flashing white quickly) Flashes white twice	Firmware updated successfully
Updating firmware	(After flashing white quickly) Flashes red twice	Firmware update failed
–	Flashes red	Transmission error occurring
–	Flashes red quickly	System error occurring

#### ③ Reset button

Condition	Status indicator	Unit status
Reset button long-pressed for 4 seconds to less than 8 seconds, then released	Flashes blue twice per second (during long-pressing/resetting)	Network-related settings Waiting for resetting/Resetting (Automatically restarts after reset)
Reset button long-pressed for 8 seconds to less than 12 seconds, then released	Flashes blue three times per second (during long-pressing/resetting)	All settings Waiting for resetting/Resetting (Automatically restarts after reset)

**NOTE:** Use a fine-tipped object to press the Reset button.

## [Bottom panel]



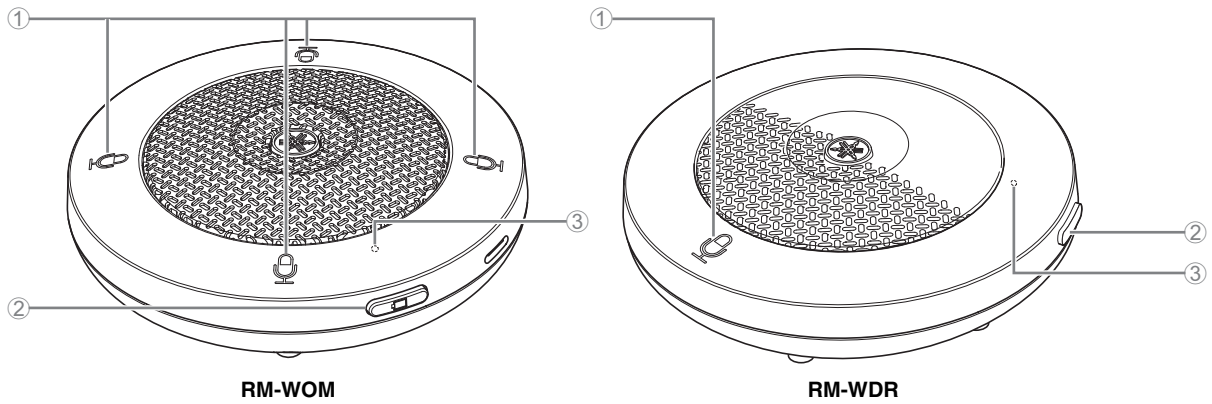
### ① Network port indicators (Dante/PoE port)

Network port indicator	Unit status
Left indicator lit green	Link up
Left indicator flashes green	Transferring data
Left indicator unlit	Link down
Right indicator lit green	Operating on word clock of peripheral device (leader)
Right indicator flashes green	Acting as word-clock leader
Right indicator flashes orange	Word clock unlocked

#### NOTICE:

- When disconnecting the LAN cable from the Dante/PoE port, wait at least five seconds before reconnecting the cable. Otherwise, damage or malfunctions may result.
  - With a Dante network, do not use the EEE function\* of the network switch. Although mutual power consumption settings are automatically adjusted between switches that support the EEE function, some switches do not perform that properly. As a result, the switch's EEE function may be enabled inappropriately in the Dante network, possibly degrading clock synchronization performance and interrupting audio. Therefore, please note the following.
    - When using managed switches, turn off the EEE function on all ports used for Dante. Do not use a switch that does not allow the EEE function to be turned off.
    - When using unmanaged switches, do not use switches that support the EEE function. In such switches, the EEE function cannot be turned off.
- \* EEE (Energy-Efficient Ethernet) function: Technology that reduces the power consumption of Ethernet devices during periods of low network traffic; also known as Green Ethernet or IEEE802.3az.

## [Top panel/side panel]



### ① Mic buttons/indicators

Condition	Mic indicator	Unit status
Mic button touched	Lit green	Microphone on
Mic button touched	Lit red (Flashes every 2 seconds)	Microphone off
Identify icon in Web GUI clicked	Flashes white	Responding (to Identify function)
Updating firmware	Flashes white quickly	Firmware being updated
Updating firmware	(After flashing white quickly) Flashes white twice	Firmware updated successfully
Updating firmware	(After flashing white quickly) Flashes red twice	Firmware update failed
–	Flashes red	Transmission error occurring
–	Flashes red quickly	System error occurring
–	Flashes red slowly	Out of range for DECT connection

### ② Battery button

- Pressing the Battery button while the unit is off will turn it on in either standby mode or startup mode.
  - Standby mode: A power-saving state in which the unit is not connected to the access point.
  - Startup mode: A state in which the unit continuously tries to establish or maintains a connection with the access point.
- Whether the unit enters standby mode or startup mode when it is turned on can be selected via [SETTINGS]→[MICROPHONE]→[Start Mode] in RM-WAP Device Manager.
- When the unit is in standby mode, long-pressing the Battery button (2 seconds) puts the unit in startup mode.
- When the unit is in startup mode, long-pressing the Battery button (2 seconds) puts the unit in standby mode.

### ③ Battery indicator

Condition	Battery indicator	Unit status
Charging the unit	Lit green	Charging (available operating time of 15 hours or more)
Charging the unit	Lit orange	Charging (available operating time of 3 hours to less than 15 hours)
Charging the unit	Lit red	Charging (available operating time of less than 3 hours)
Charging the unit	Unlit	Charging finished
Battery button pressed	Lit green for two seconds	Remaining operating time of 15 hours or more
Battery button pressed	Lit orange for two seconds	Remaining operating time of 3 hours to less than 15 hours
Battery button pressed	Lit red for two seconds	Remaining operating time of less than 3 hours
(Continuing to use the unit without charging)	Flashes red	Remaining operating time of less than 1 hour
Battery button long-pressed for 2 to 3 seconds	Flashes orange slowly	Enters standby mode

**IMPORTANT:**

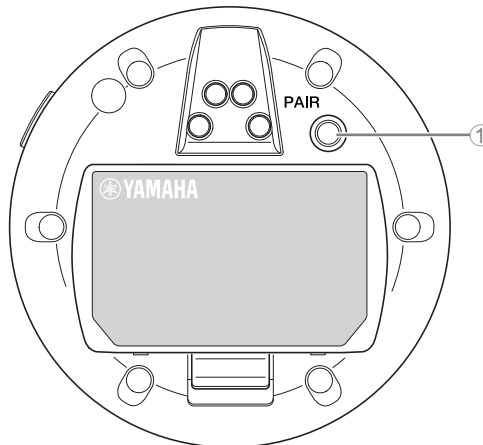
- The microphone is pre-installed with an RM-WBT battery. In order to maintain battery capacity, charge the microphone (battery) once every six months.

- Do not remove the battery from the microphone while it is on.

**NOTE:**

- Power consumption can be reduced by putting the microphone in standby mode.
- Putting the microphone in standby mode cuts the DECT connection with the access point. When the standby mode is exited (by long-pressing the Battery button again for 2 to 3 seconds), the connection is re-established.

### [Bottom panel]



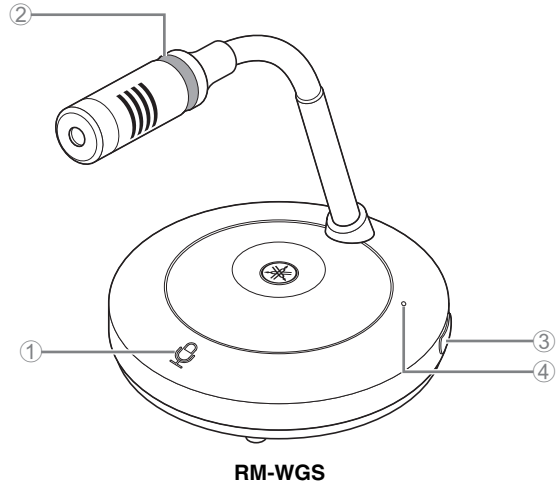
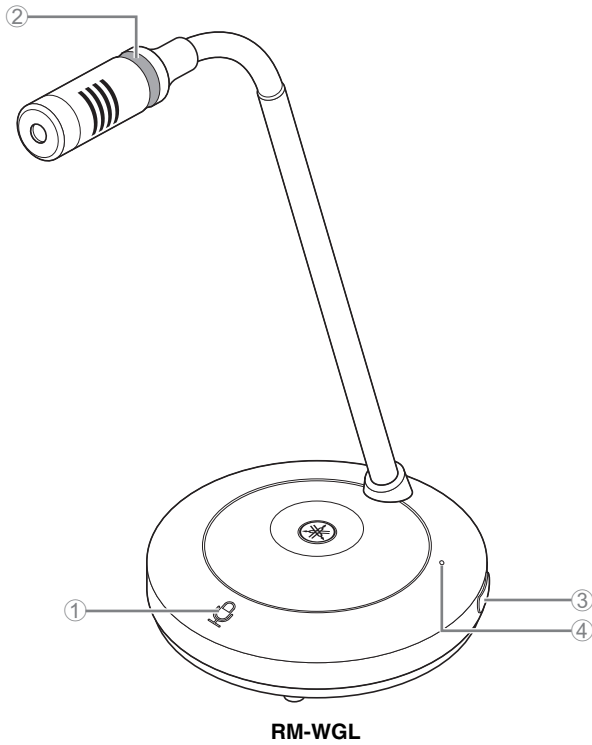
### ① PAIR button

Condition	Mic indicator	Unit status
PAIR button long-pressed for at least 2 seconds	Flashes blue quickly	Waiting for pairing/Pairing
PAIR button long-pressed for at least 2 seconds	(After flashing blue quickly) Flashes blue twice	Paired successfully
PAIR button long-pressed for at least 2 seconds	(After flashing blue quickly) Flashes red twice	Pairing failed

**NOTE:**

In an RM series wireless solution that includes a charger, pairing is done by using the ACTIVATE button on the charger. Accidentally long-pressing the PAIR button after the microphone has already been paired will break the pairing. In that case, place the microphone on the charger and long-press the ACTIVATE button for at least 2 seconds to pair it again.

[Top panel/side panel]



①  **Mic buttons/indicators**

Condition	Mic indicator	Unit status
In Toggle mode: Mic button touched continuously	Lit green	Microphone on
In Toggle mode: Mic button released	Lit red (Flashes every 2 seconds)	Microphone off
In Push to talk mode: Mic button touched continuously	Lit green	Microphone on while the button is touched
In Push to talk mode: Mic button released	Lit red (Flashes every 2 seconds)	Microphone off

**NOTE:** Push to talk is a communication method that allows you to talk only while a button is pressed. Multiple devices cannot be used to talk at the same time. For details on switching between the Toggle and Push to talk modes, refer to the RM Series Wireless Microphone System Web GUI Device Manager Operation Guide.

All other Mic button/indicator functions are the same as described for RM-WOM and RM-WDR.

② **Ring indicator**

Flashes together with the Mic indicators.

③  **Battery button**

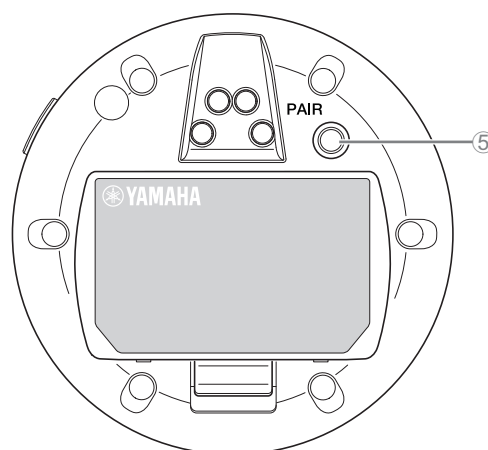
④ **Battery indicator**

Functions in the same way as the Battery button/indicator of the RM-WOM and RM-WDR.

## [Bottom panel]

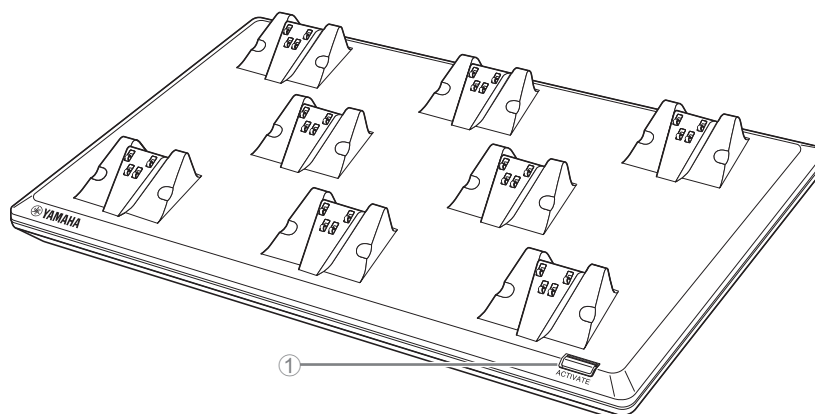
### ⑤ PAIR button

Functions in the same way as the PAIR button of the RM-WOM and RM-WDR.



## RM-WCH-8

## [Top panel]

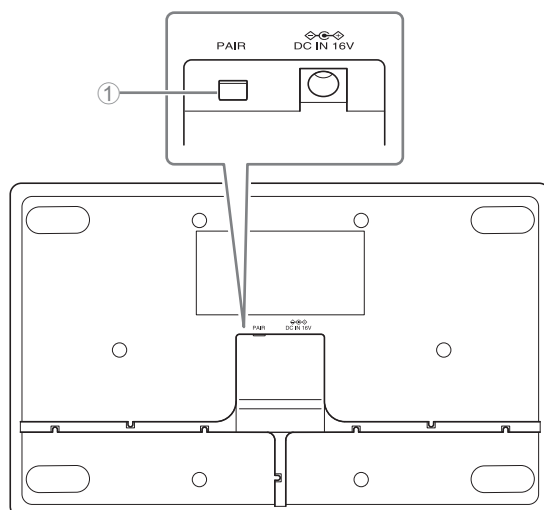


### ① ACTIVATE button/indicator

Condition	ACTIVATE indicator	Unit status
Power plug inserted into electrical outlet	Lit green	Operating
ACTIVATE button long-pressed for at least 2 seconds	Flashes blue quickly	Waiting for pairing/Pairing of access point and microphone(s) The pairing process will time out after 120 seconds.
ACTIVATE button long-pressed for at least 2 seconds	(After flashing blue quickly) Flashes blue twice	Access point and microphone(s) paired successfully
ACTIVATE button long-pressed for at least 2 seconds	(After flashing blue quickly) Flashes red twice	Pairing of access point and microphone(s) failed
Identify icon in Web GUI clicked	Flashes white	Responding (to Identify function)
Updating firmware	Flashes white quickly	Firmware being updated
Updating firmware	(After flashing white quickly) Flashes white twice	Firmware updated successfully
Updating firmware	(After flashing white quickly) Flashes red twice	Firmware update failed
–	Flashes red	Transmission error occurring
–	Flashes red quickly	System error occurring



## [Bottom panel]



### ① PAIR button

Condition	ACTIVATE indicator	Unit status
PAIR button long-pressed for at least 2 seconds	Flashes blue quickly	Waiting for pairing/Pairing The pairing process will time out after 120 seconds.
PAIR button long-pressed for at least 2 seconds	(After flashing blue quickly) Flashes blue twice	Paired successfully
PAIR button long-pressed for at least 2 seconds	(After flashing blue quickly) Flashes red twice	Pairing failed

# INSTALLATION AND SETUP

Before installing the unit, the SITE SURVEY function of RM-WAP Device Manager must be used to measure the signal conditions in the area.

## 1. Prepare the environment for RM-WAP Device Manager to operate.

For details, refer to “Starting up the Web GUI Device Manager”.

## 2. Use the SITE SURVEY function to determine the number of microphones that can be used in the electric field environment of the vicinity.

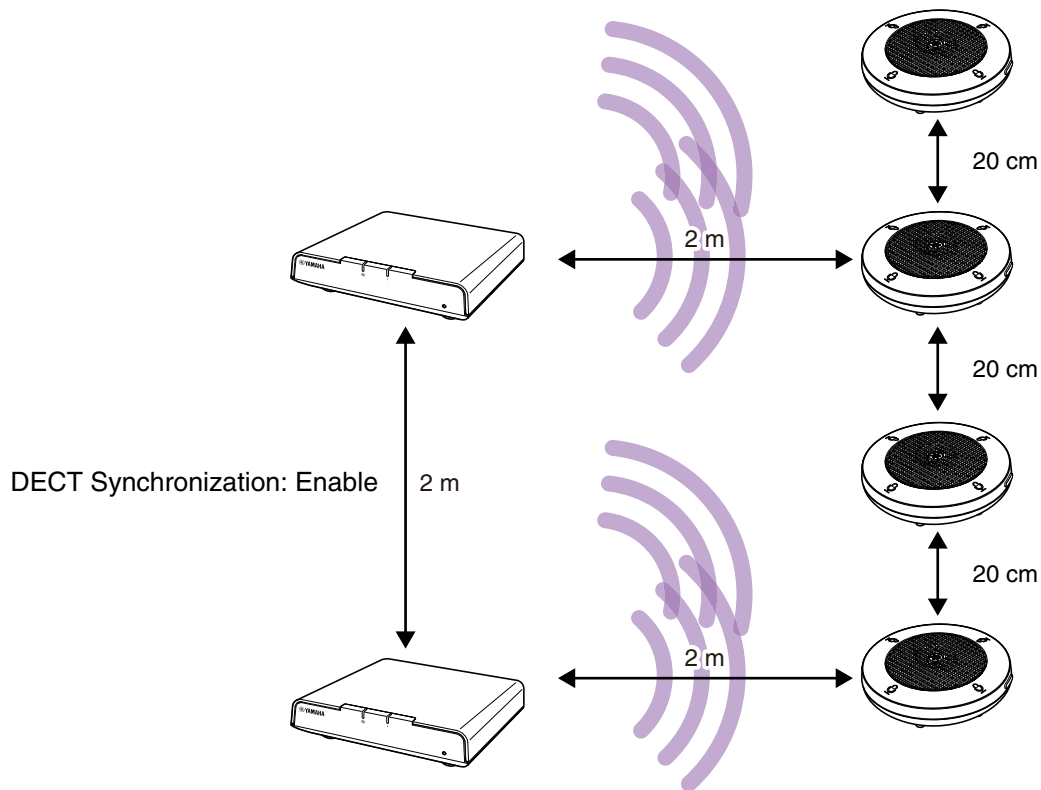
For details, refer to “Using the SITE SURVEY function”.

## 3. Install the device.

For details on mounting the access point to the wall or ceiling, read the RM-WAP Owner’s Manual.

### IMPORTANT: Installation distances between devices

When installing multiple devices in the same area, activate DECT synchronization and maintain distances of at least 2 m between access points and between an access point and microphone, and of at least 20 cm between microphones.



## 4. Use the AUTO SETUP function to set up the devices.

For details, refer to “Using the AUTO SETUP function”.

# AVAILABLE UTILITY SOFTWARE

Use the Web GUI “RM-WAP Device Manager” to check/change the settings of the devices.

Prepare the following.

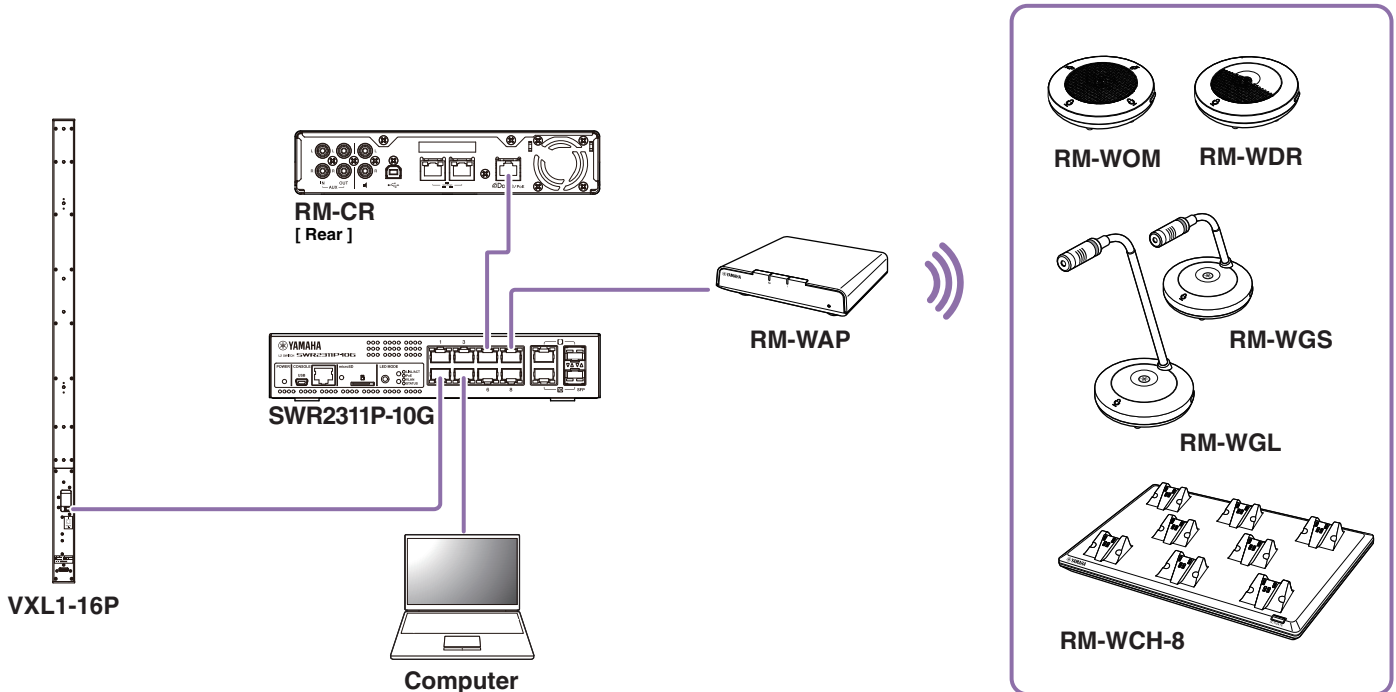
- Computer
- LAN cable

## Starting up the Web GUI Device Manager

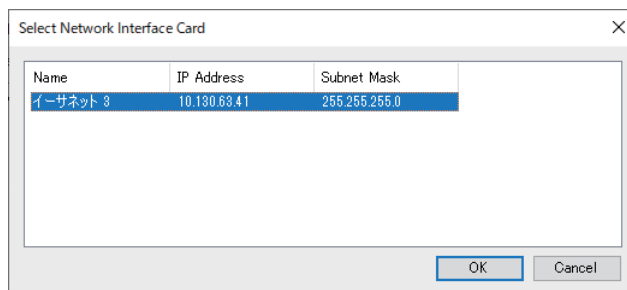
1. Download the application “RM Device Finder” from the Yamaha website (<http://download.yamaha.com/>), and then start it.

**NOTE:** For details on RM Device Finder, refer to the User Guide included with RM Device Finder.

2. Using a LAN cable, connect the computer to the network switch where the access point is connected.

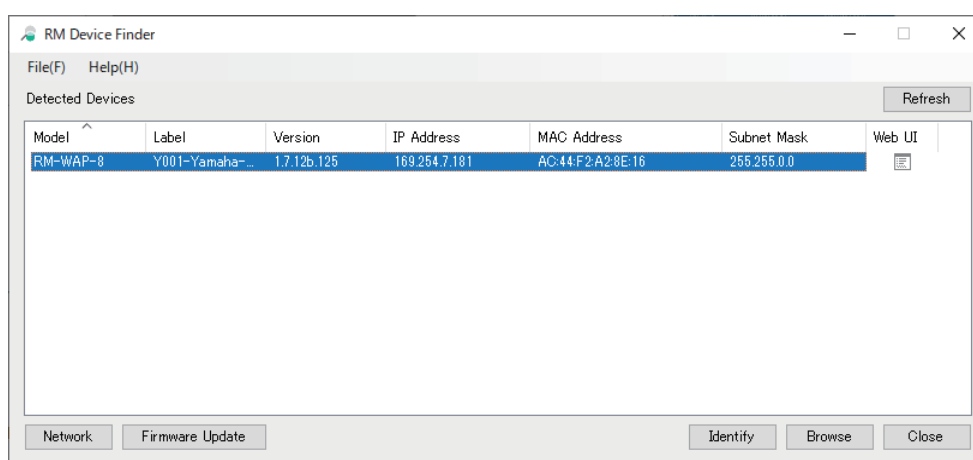


**3.** Select a network in the [Select Network Interface Card] window, and then click [OK].



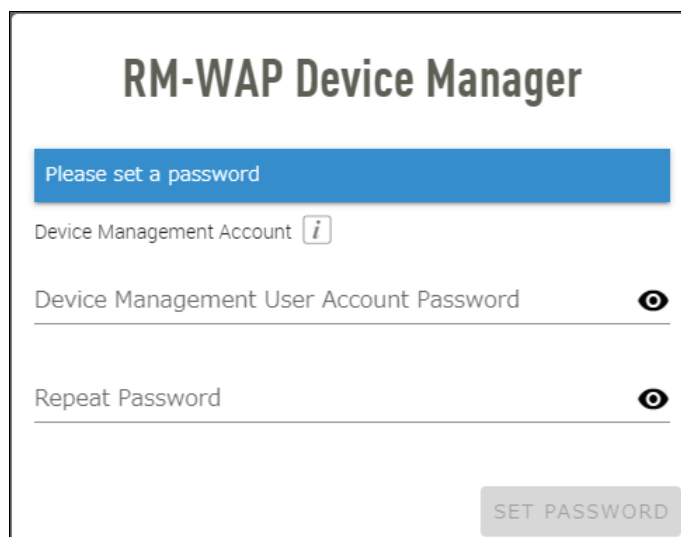
**4.** Double-click this unit in the [Detected Devices] window. Alternatively, select this unit, and then click the [Browse] button.

The password settings window of RM-WAP Device Manager appears.

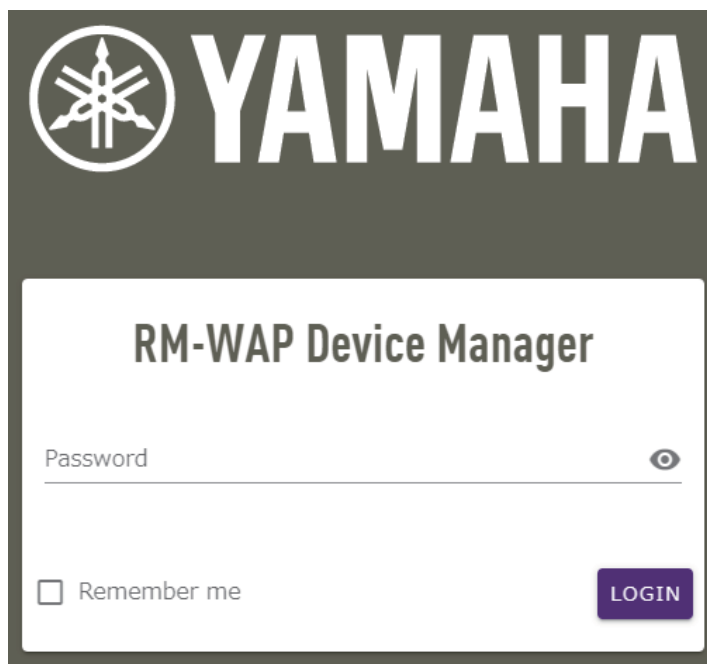


As an example, the RM-WAP-8 is shown in the following screen.

**5.** Specify a password in the password settings window, and then click the [SET PASSWORD] button.



**6. Type the password into the login window, and then click the [LOGIN] button.**

The image shows a login window for the Yamaha RM-WAP Device Manager. At the top, there is the Yamaha logo (a stylized tuning fork inside a circle) and the word "YAMAHA" in large, bold, white capital letters on a dark grey background. Below this, the title "RM-WAP Device Manager" is centered in a white box. Underneath the title is a password input field with the placeholder text "Password" and a small eye icon to its right. Below the password field is a checkbox labeled "Remember me". To the right of the checkbox is a purple button with the word "LOGIN" in white capital letters.

The [HOME] window appears.

This completes the startup.

**NOTE:** For details on using RM-WAP Device Manager, refer to the RM Series Wireless Microphone System Web GUI Device Manager Operation Guide.

The latest software and manuals can be downloaded from the following website.

▼ **Yamaha website (Downloads)**  
<https://download.yamaha.com/>

## Using the SITE SURVEY function

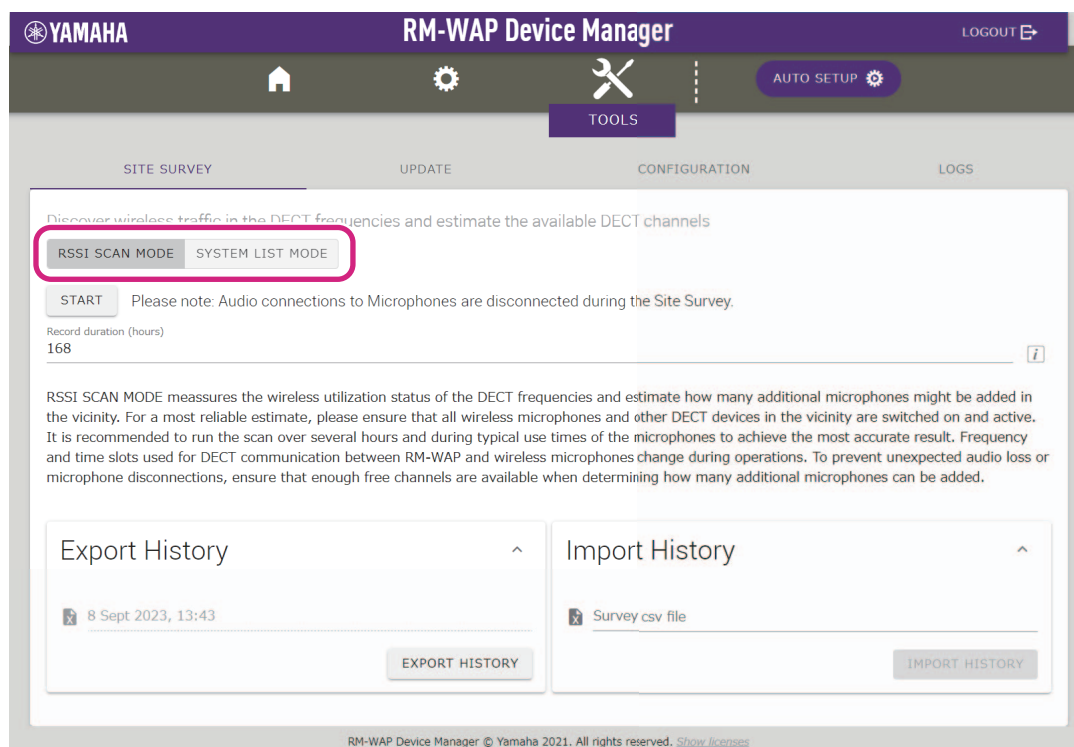
The SITE SURVEY function in RM-WAP Device Manager can be used to check the signal conditions in the installation environment and to estimate how many microphones can be installed. In addition, the SITE SURVEY results can be saved to a file, and the saved file can be imported.

**IMPORTANT:** If radio frequency interference occurs, there may be no sound from the microphones or the microphone connection may be unexpectedly cut. We recommend thoroughly examining the environment before installation.

## Displaying the SITE SURVEY window

The SITE SURVEY function is available via [TOOLS]→[SITE SURVEY] in RM-WAP Device Manager.

Click the [RSSI SCAN MODE] button or [SYSTEM LIST MODE] button to switch the mode.



## Starting a SITE SURVEY

Click the [START] button in the [RSSI SCAN MODE] window or [SYSTEM LIST MODE] window.

The access point begins measuring the signal strength and channel usage status in the installation environment.

## [RSSI SCAN MODE] window

Click the [RSSI SCAN MODE] button. Click the [START] button to start measuring.

The measurement results of the signal conditions and the estimated number of microphones that can be used in the installation environment are displayed.

For highly accurate measurements, make sure that all nearby wireless microphones and other DECT devices are operational. In addition, it is recommended to measure for several hours under typical usage conditions in order to obtain accurate results.

YAMAHA RM-WAP Device Manager LOGOUT

SITE SURVEY UPDATE CONFIGURATION LOGS

Discover wireless traffic in the DECT frequencies and estimate the available DECT channels

RSSI SCAN MODE SYSTEM LIST MODE

STOP Please note: Audio connections to Microphones are disconnected during the Site Survey.

0.0%

Record duration (hours)  
168

RSSI SCAN MODE measures the wireless utilization status of the DECT frequencies and estimate how many additional microphones might be added in the vicinity. For a most reliable estimate, please ensure that all wireless microphones and other DECT devices in the vicinity are switched on and active. It is recommended to run the scan over several hours and during typical use times of the microphones to achieve the most accurate result. Frequency and time slots used for DECT communication between RM-WAP and wireless microphones change during operations. To prevent unexpected audio loss or microphone disconnections, ensure that enough free channels are available when determining how many additional microphones can be added.

Current Microphone Capacity Estimate  
Estimation of capacity based on current measurements.

Estimate number of microphones that can be installed in the vicinity

High Density Audio Mode	2
High Quality Audio Mode	1

Best Microphone Capacity Estimate  
The capacity estimation is based on all signal levels measured during the time of the site survey.

Estimate number of microphones that can be installed in the vicinity

High Density Audio Mode	0
High Quality Audio Mode	0

The capacity estimation is based on current signal levels. Moving or removing, powering on or off additional wireless DECT systems or microphones will influence the capacity estimates.

Microphone Channel usage  
This figure shows the number of available and occupied microphone channels since start of the survey.

DECT Heatmap  
This heatmap shows the received signal strength for each DECT channel. Any channel with a signal strength above -62 dBm is deemed to be currently used by another device for DECT communication. If DECT synchronization is not available or not activated, any non-synchronized DECT device will occupy two adjacent channels. For maximized DECT usage please enable synchronization on all devices in the vicinity where possible.

Export History

0.0%

EXPORT HISTORY

Import History

Survey csv file

IMPORT HISTORY

RM-WAP Device Manager © Yamaha 2021. All rights reserved. Show licenses

## [SYSTEM LIST MODE] window

Click the [SYSTEM LIST MODE] button. Click the [START] button to start measuring.

This displays the DECT base units in the installation environment and their signal strengths.

The screenshot shows the RM-WAP Device Manager interface. At the top, there is a navigation bar with the Yamaha logo, the title "RM-WAP Device Manager", and a "LOGOUT" button. Below the navigation bar, there are icons for home, settings, tools, and auto setup. The main content area is divided into sections: "SITE SURVEY", "UPDATE", "CONFIGURATION", and "LOGS". The "SITE SURVEY" section is active and contains a "Discover wireless traffic in the DECT frequencies and estimate the available DECT channels" instruction. Below this, there are two buttons: "RSSI SCAN MODE" and "SYSTEM LIST MODE", with the latter highlighted by a red box. A "STOP" button is also present, along with a note: "Please note: Audio connections to Microphones are disconnected during the Site Survey." A progress bar shows "0.0%" completion. Below the progress bar, the "Record duration (hours)" is set to "168". A detailed explanation of "SYSTEM LIST MODE" follows, stating it allows searching for other RM-WAPs and neighboring DECT base stations, listing their RFPI (Radio Fixed Part Identity) and RSSI (Radio Signal Strength Indicator). It notes that devices with a signal strength of -62 dBm or higher might interfere with the DECT communication. A table of discovered devices is shown below, with columns for RFPI, RSSI, First discovered, and Last update. At the bottom, there are "Export History" and "Import History" sections, both showing "0.0%" progress. The "Export History" section has an "EXPORT HISTORY" button, and the "Import History" section has an "IMPORT HISTORY" button and a "Survey csv file" input field.

YAMAHA RM-WAP Device Manager LOGOUT

HOME SETTINGS TOOLS AUTO SETUP

SITE SURVEY UPDATE CONFIGURATION LOGS

Discover wireless traffic in the DECT frequencies and estimate the available DECT channels

RSSI SCAN MODE **SYSTEM LIST MODE**

STOP Please note: Audio connections to Microphones are disconnected during the Site Survey.

0.0%

Record duration (hours)  
168

SYSTEM LIST MODE allows to search and find other RM-WAPs and neighboring DECT base stations. Devices will be listed with their RFPI (Radio Fixed Part Identity) and the RSSI (Radio Signal Strength Indicator). Devices with a signal strength of -62 dBm or higher might interfere with the DECT communication of the RM-WAP that is running the scan. Interference might lead to unexpected audio loss or microphone disconnections. It is recommended to enable DECT synchronization to synchronize the DECT clock between different WAPs and adjust RF power levels to prevent signal interferences. Please note that RM wireless microphone and other DECT mobile devices, known as Portable Parts, cannot be found in this mode.

RFPI	RSSI	First discovered	Last update
0357040FC8	-52	13 Sept 2023 - 16:22:52	13 Sept 2023 - 16:22:52
03570A85A0	-52	13 Sept 2023 - 16:22:54	13 Sept 2023 - 16:23:32
035703F788	-48	13 Sept 2023 - 16:22:56	13 Sept 2023 - 16:22:56
035703F748	-55	13 Sept 2023 - 16:22:58	13 Sept 2023 - 16:23:34
035703F660	-50	13 Sept 2023 - 16:23:00	13 Sept 2023 - 16:23:15
035700D800	-48	13 Sept 2023 - 16:23:02	13 Sept 2023 - 16:23:38
03571FB980	-14	13 Sept 2023 - 16:23:04	13 Sept 2023 - 16:23:40
035703F740	-52	13 Sept 2023 - 16:23:08	13 Sept 2023 - 16:23:36
035700D808	-52	13 Sept 2023 - 16:23:19	13 Sept 2023 - 16:23:19
03570A85B8	-53	13 Sept 2023 - 16:23:21	13 Sept 2023 - 16:23:21
035703F888	-55	13 Sept 2023 - 16:23:26	13 Sept 2023 - 16:23:26
035703F880	-53	13 Sept 2023 - 16:23:28	13 Sept 2023 - 16:23:28
0357040FC0	-49	13 Sept 2023 - 16:23:30	13 Sept 2023 - 16:23:30
035703F630	-57	13 Sept 2023 - 16:23:34	13 Sept 2023 - 16:23:34

Export History 0.0% EXPORT HISTORY

Import History Survey csv file IMPORT HISTORY

RM-WAP Device Manager © Yamaha 2021. All rights reserved. [Show licenses](#)



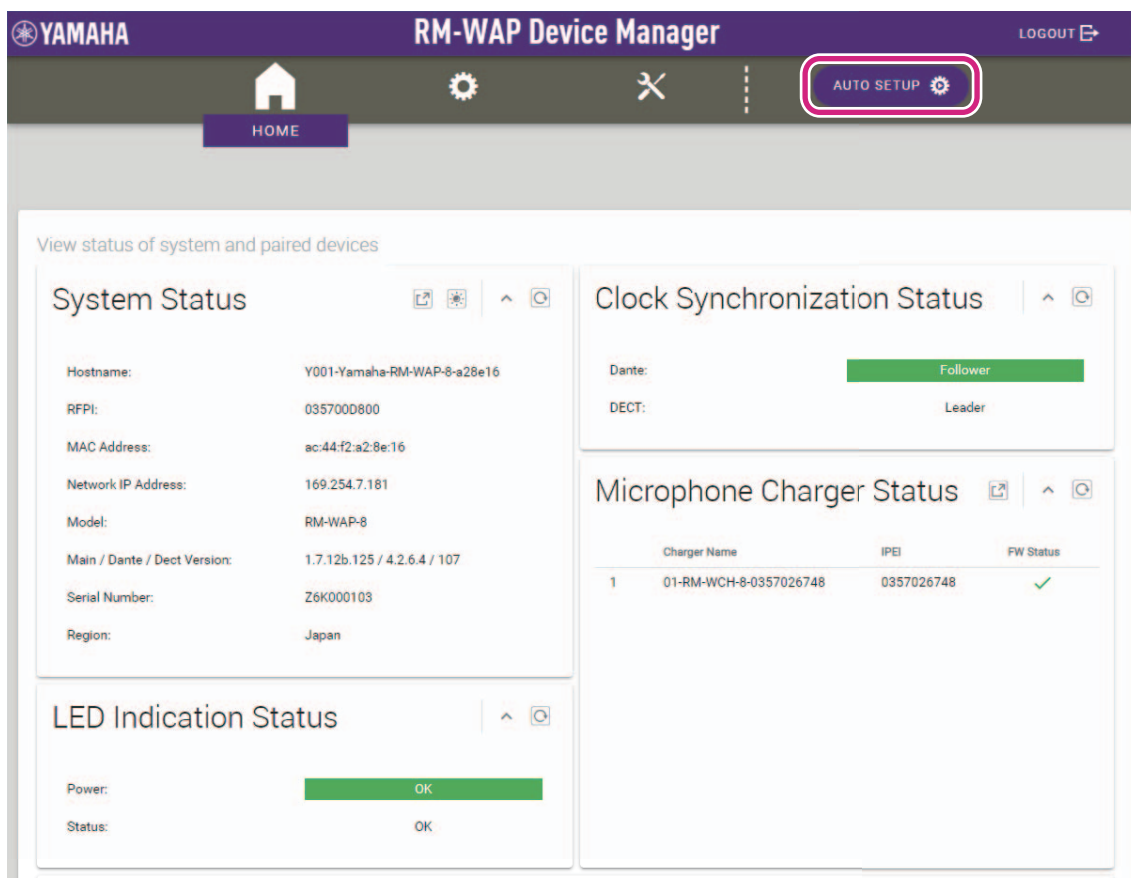
## Using the AUTO SETUP function

With the AUTO SETUP function, devices can be easily set up using the wizard.

Even in an environment where the AUTO SETUP function cannot be used, RM-WAP Device Manager can be used to manually specify settings.

**NOTE:** RM-WCH is required in order to use the AUTO SETUP function.

### 1. Click the [AUTO SETUP] button.



The wizard starts up.

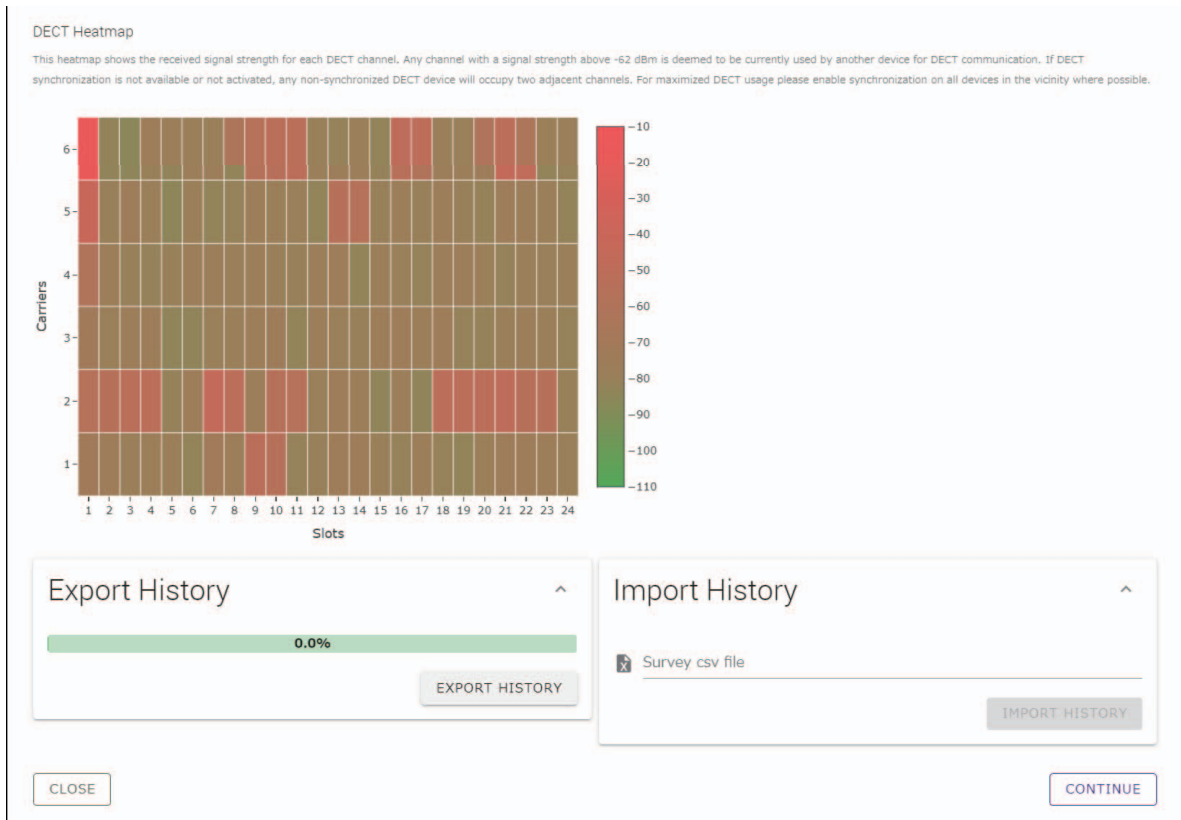
## 2. Follow the wizard's instructions to continue the setup.

### [1] Site Survey

Check the contents of the window, and then click the [CONTINUE] button.

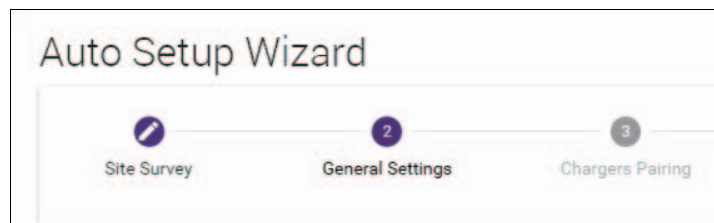
The window shows the number of microphones that can be used in the installation environment. It also shows the signal strength in the installation environment and the channel usage status.





**NOTE:**

- You can also click the title of the next window (in this case, [2 General Settings]) to display the next window.
- Once the window has been displayed, the circled number in the window title is replaced with [1]. Clicking a window title where the circled number has been replaced with [1] displays that window again.



## [2] General Settings

Check the access point settings, and then click the [CONTINUE] button.

Auto Setup Wizard

1 Site Survey 2 General Settings 3 Chargers Pairing 4 Firmware Update 5 Microphones Pairing 6 Audio Routing 7 Summary

1 AP Name

Mode: NAME USING UNIT ID MANUAL

Unit ID: 1

AP Name: Yamaha-RM-WAP-8

2 Locale

System Language: English (US)

Time Zone: -05:00 Eastern Time (UTC-05:00)

3 Time Settings

Current Date & Time

Date: 01/13/2022 Time: 11:10:24 AM

Date Format: MM/dd/yyyy

Enable 24 hour time format

NTP Support

Network Time Server 1

Network Time Server 2

Network Time Server 3

Network Time Server 4

BACK CONTINUE

**NOTE:** The access point settings can be changed if necessary.

### ① [AP Name]

Allows you to select whether to specify the name of the access point automatically or manually.

### ② [Locale]

Allows you to specify the time zone.

### ③ [Time Settings]

- Allows you to specify the date and time.
- Allows you to select whether to use NTP.

### [3] Chargers Pairing

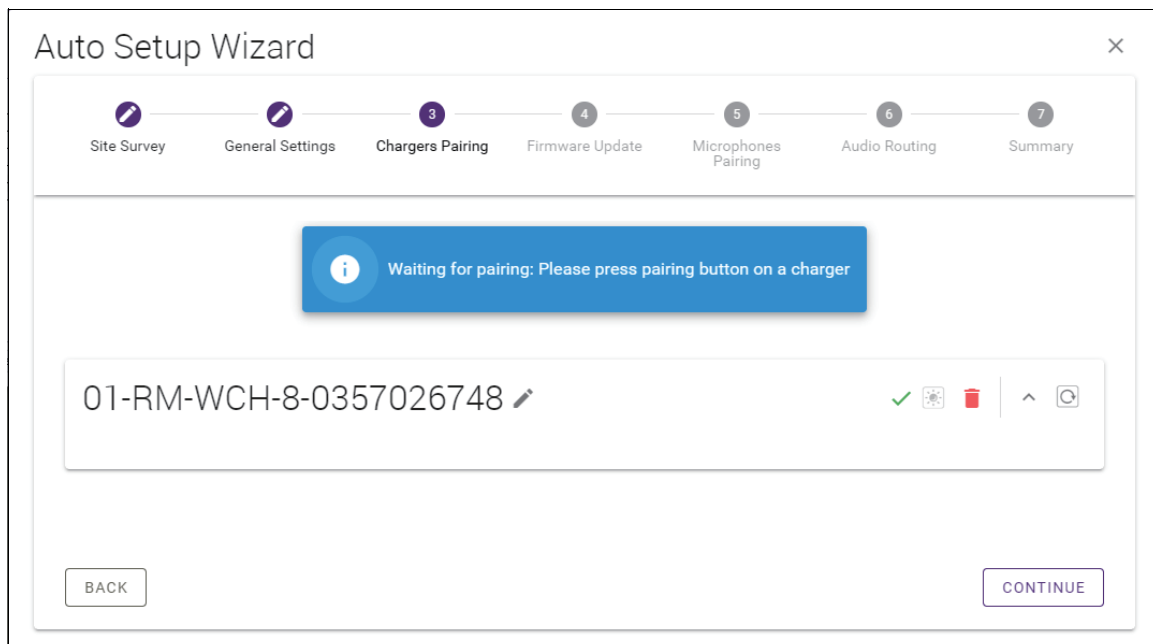
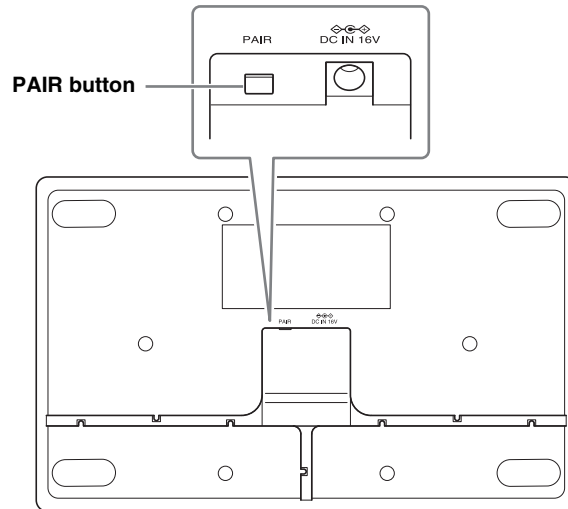
- 1 Insert the charger power plug into an electrical outlet.

The charger starts up.

- 2 Long-press the PAIR button (on the bottom panel of the charger) for at least two seconds.

The access point and charger are paired. When pairing is finished, the charger name appears in the window.



**NOTE:** Pairing means that the products register each other with the information required for a DECT connection. The access point and charger are paired, and a DECT connection is established at the same time.



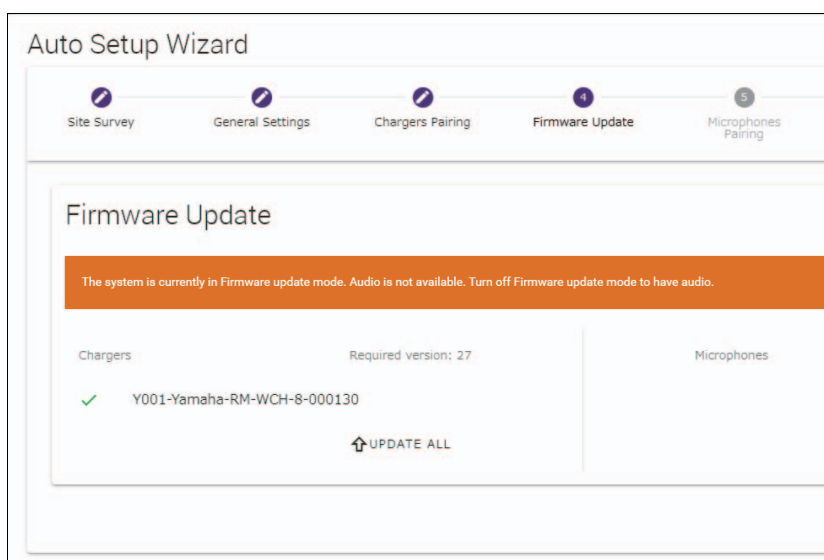
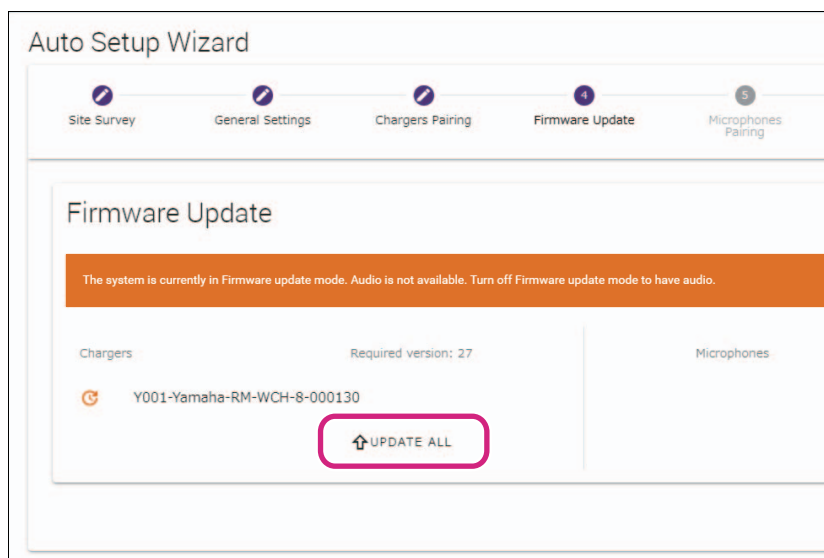
- 3 Click the [CONTINUE] button.

## [4 Firmware Update]

- ① If  appears to the left of the charger name, click the [UPDATE ALL] button.

The charger firmware is updated. When the update is finished,  changes to .

**NOTE:** If  appeared from the beginning, step ① does not need to be performed.



- ② Place the microphone(s) on the charger.

The microphone firmware is updated. During the update, the Mic indicators (on the top panel of the microphone) flashes white quickly. When the update is finished, the indicators go off.

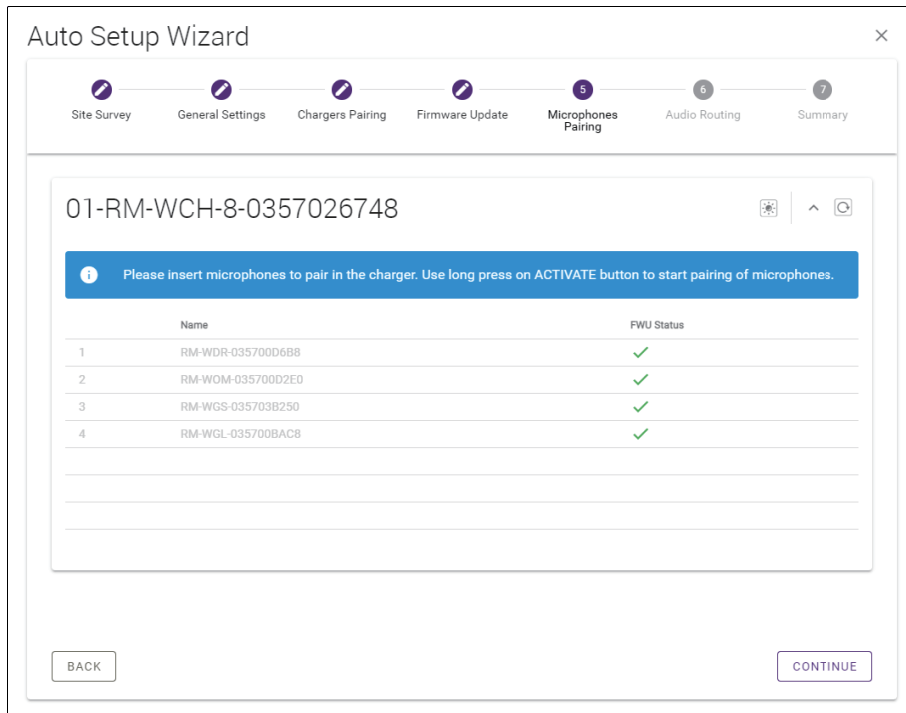
**IMPORTANT:** Do not remove the microphone(s) from the charger until setup is finished.

**NOTE:** The microphones are updated one at a time.

- ③ Click the [CONTINUE] button.

## [5] Microphones Pairing

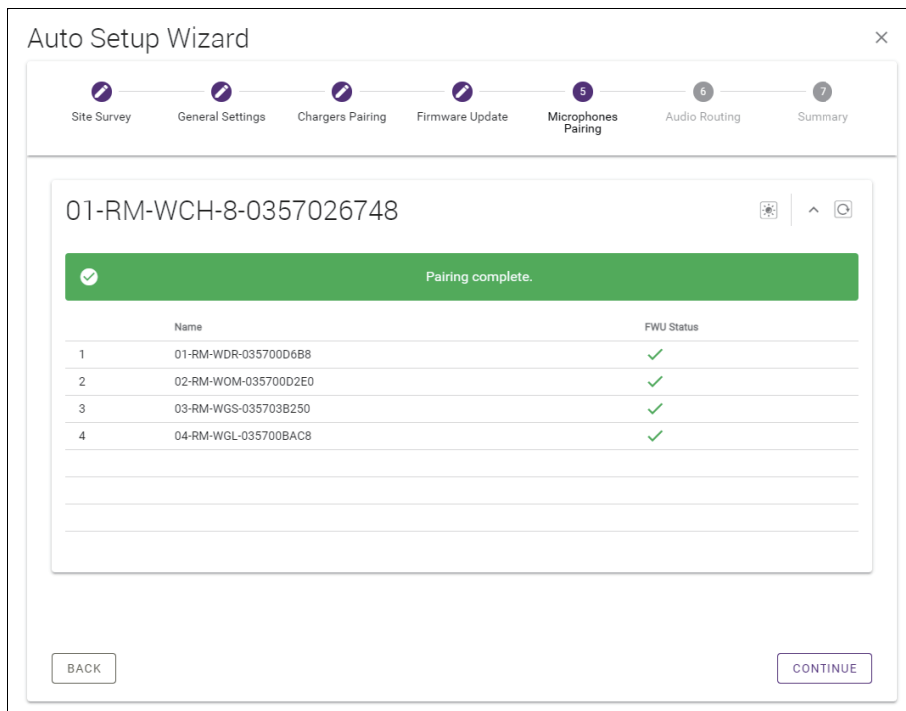
The name(s) of the microphone(s) appear faintly in the window.



① **Long-press the ACTIVATE button (on the top panel of the charger) for at least two seconds.**

The access point and microphone(s) are paired. When pairing is finished, the name(s) of the microphone(s) change from appearing faintly to appearing in black.

**NOTE:** All microphones placed on the charger can be paired with a single long press.

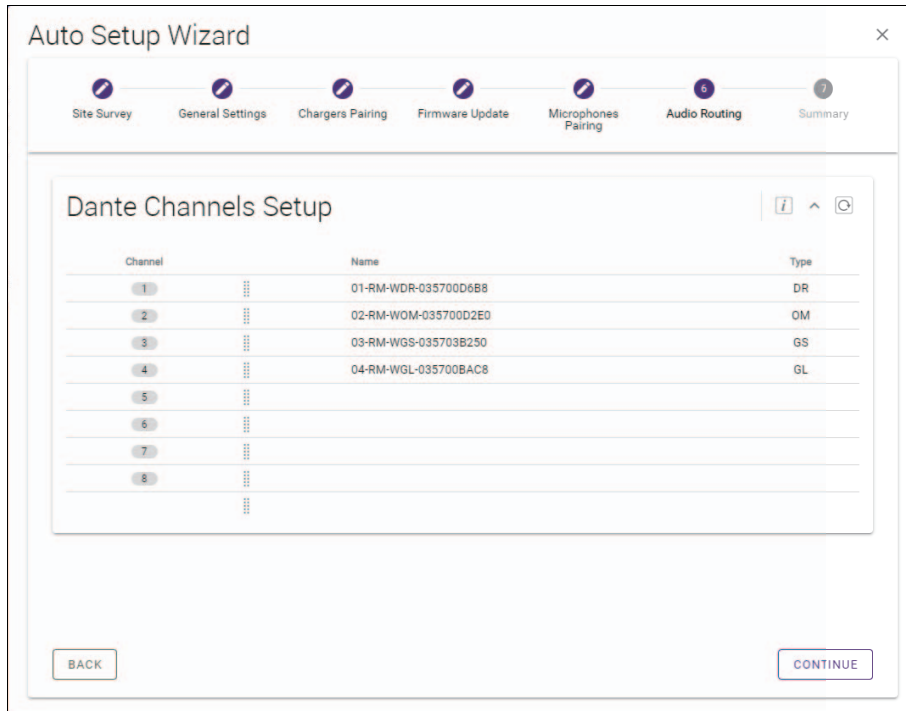


② **Click the [CONTINUE] button.**

## [6] Audio Routing

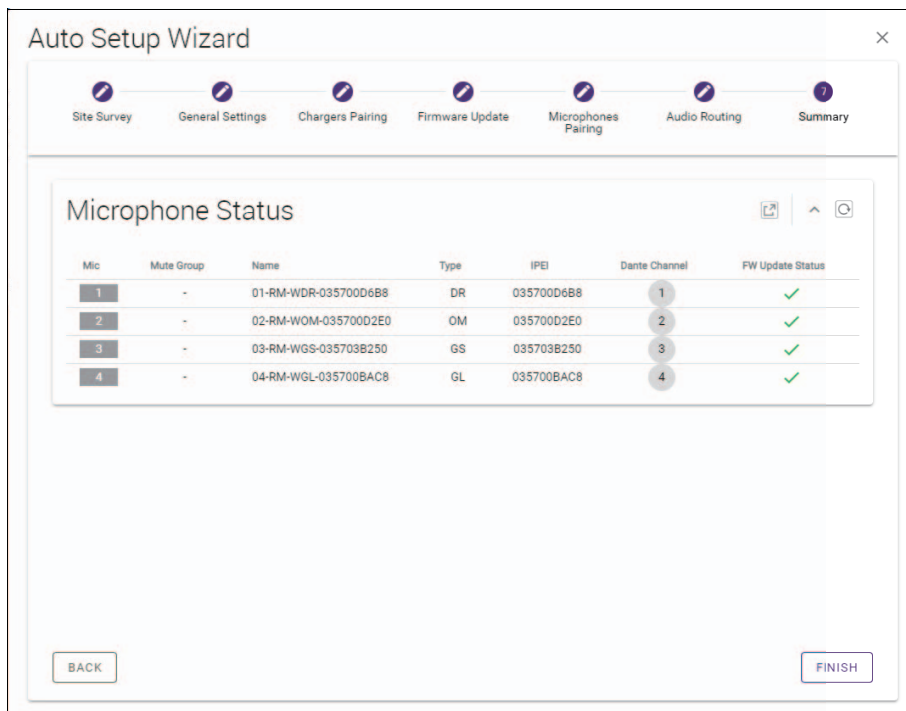
Check the Dante channel to which each microphone is assigned, and then click the [CONTINUE] button.

**NOTE:** You can change the channel assignment by dragging the microphone name to the row of the desired Dante channel.



## [7] Summary

Check the microphone settings, and then click the [FINISH] button.

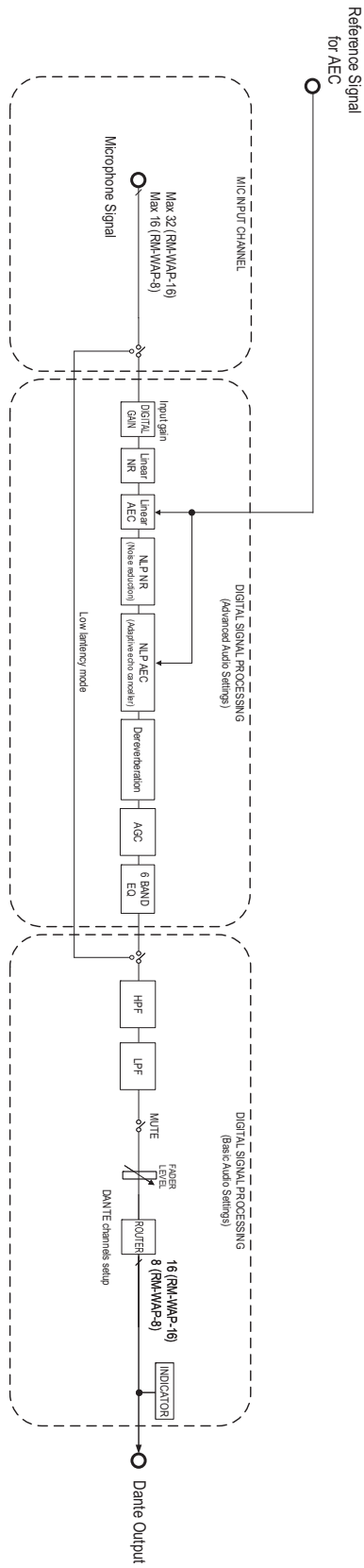


This completes the setup. When a microphone is removed from the charger, a DECT connection between the access point and microphone will be established.



# APPENDIX

## Block diagram



# EXPLANATIONS

## About DECT

---

DECT (Digital Enhanced Cordless Telecommunications) is a digital cordless telephone standard established by the European Telecommunications Standards Institute (ETSI) in 1988. RM-W is not a cordless telephone device, but uses DECT as a method for wireless audio communication. DECT comprises conventional as well as next-generation DECT. RM-W uses next-generation DECT.

## Stable communication

DECT uses the 1.9 GHz band for wireless communication.

Since the 2.4 GHz wireless communication band is used by wireless LAN access points, the many products using this band raise its susceptibility to radio frequency interference.

By using the 1.9 GHz band, DECT is less likely to incur radio frequency interference, ensuring more stable communication.

## DECT-related settings (RM-WAP Device Manager)

- [HOME] → [Clock Synchronization Status] → [DECT]
- [HOME] → [Microphone Status] → [IPEI]
- [HOME] → [Microphone Status] → [Link Quality]
- [SETTINGS] → [AUDIO] → [DECT Audio Mode]
- [SETTINGS] → [DECT] → [RF Power Levels]
- [SETTINGS] → [DECT] → [DECT Synchronization]
- [TOOLS] → [SITE SURVEY]

## DECT-related terms

### ■ RFPI

RFPI (Radio Fixed Part Identity) is the identification number of the access point for DECT communication.

Yamaha IDs are "035\*\*\*\*".

### ■ RSSI

RSSI (Received Signal Strength Indicator) is an indication of the strength of the received signal.

RSSI indicates how strongly a particular WAP is receiving signals from other WAPs. The longer the distance, the smaller the RSSI.

By checking the RSSI, the degree of interference between WAPs can be quantified.

In the [SYSTEM LIST MODE] window of the SITE SURVEY function in RM-WAP Device Manager, the measurement unit for RSSI is dBm.

### ■ Cell

Cell is the signal range of a WAP.

### ■ Same Space

This is the space where multiple cells overlap. Signals from multiple systems affect each other.

### ■ RF Power Level

RF Power level (Radio Frequency Power level) is the strength of the signals output by a WAP.

By changing this strength, the cell size can be changed.

When installing multiple WAPs, set them up so that their signals do not affect each other.

Reduced signal strength is one cause of sound quality problems. Do not change the signal strength from "Full" unless there is a specific reason.

■ **Carrier**

DECT uses the 1.9 GHz band.

The 1.9 GHz band can be divided into smaller frequency bands, and each band partition can be used for separate communications. This method is called FDMA (Frequency-Division Multiple Access), and the carrier waves in these band partitions are called carriers. The number and locations of available carriers in the 1.9 GHz band differ depending on the region (product distribution area).

There are 10 carriers in the EU, 5 carriers in the US, and 6 carriers in Japan.

■ **Frame and slot**

The carrier wave is divided into regular periods called frames. Additionally, a frame is divided into multiple slots.

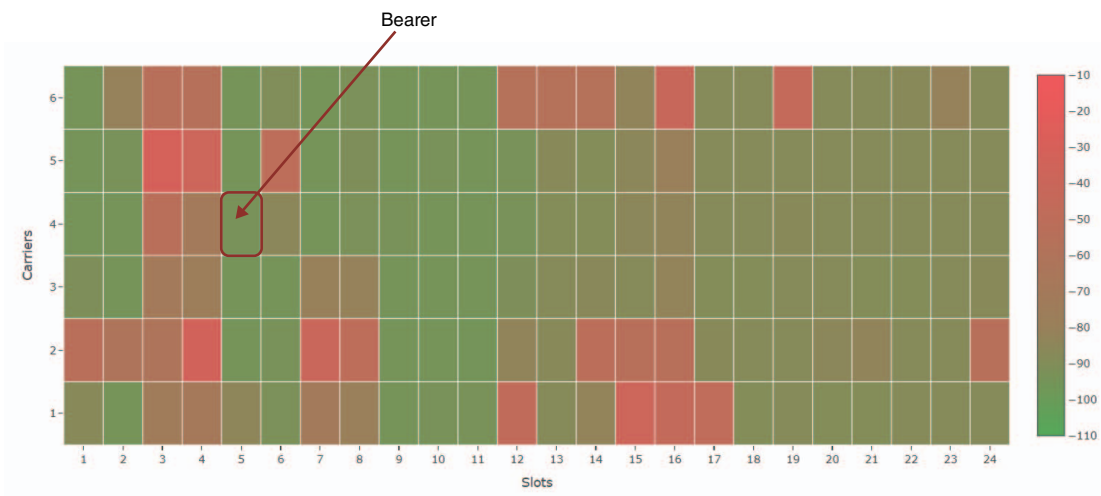
Frames are transmitted continuously as containers for transmitting audio signals.

By assigning each channel of the audio signal to a different slot, the signals of multiple audio channels can be transmitted simultaneously.

■ **Bearer**

Bearers are spaces into which the 1.9 GHz band has been divided along the time and frequency axes.

One bearer can transmit one channel of microphone audio signals.



Different regions have different numbers of carriers and, therefore, different numbers of bearers.

Region		Bearers
US	5 Carriers × 24 Slots	120
EU	10 Carriers × 24 Slots	240
JPN	6 Carriers × 24 Slots	144

■ **FP (Fixed Part) and PP (Portable Part)**

DECT communication involves a relationship between the host unit and client unit.

The host unit is called FP (Fixed Part), and the client unit is called PP (Portable Part).

For this wireless microphone system, the WAP is the FP, and the wireless microphone is the PP.

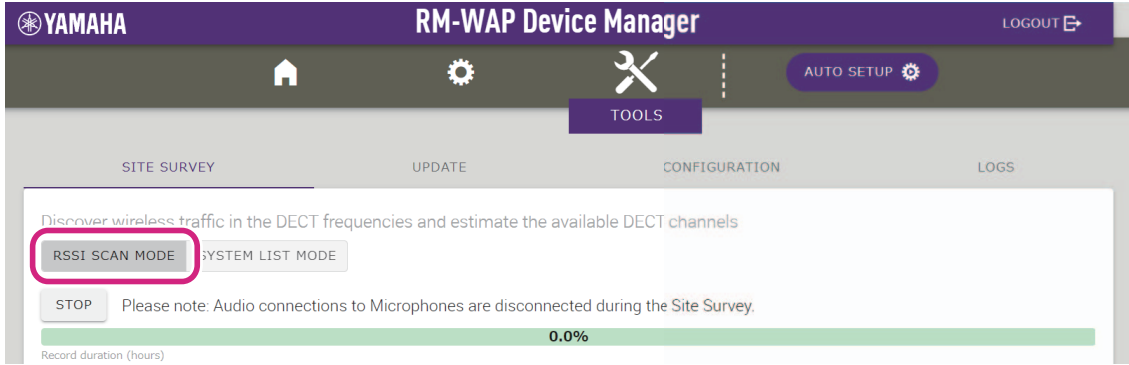
Unit type	Part type	Wireless microphone system
Host Unit	FP (Fixed Part)	Wireless Access Point (WAP)
Client Unit	PP (Portable Part)	Wireless Microphone

## Understanding the [SITE SURVEY] window

The SITE SURVEY function measures signals in the installation environment and displays the signal usage status, signal strength, and estimated number of microphones that can be used. The measurement results can be saved to a file, and the saved file can be imported and displayed. The following explains how to read the measurement results displayed in the [SITE SURVEY] window.

### RSSI SCAN MODE

In this mode, the signal usage status of DECT frequencies and the estimated number of microphones that can be used in the installation environment can be checked.



### Microphone Capacity Estimate

This is the estimated number of microphones that can be used.



#### ① Number of bearers (channels)

<span style="color: green;">■</span> Available	This indicates the number of free bearers (channels).
<span style="color: red;">■</span> Occupied	This indicates the number of bearers (channels) in use.

**NOTE:** Some bearers (channels) are used for control communication or as reserved areas and are not used for audio communication.

As a result, the number of microphones that can be used is less than the number of free bearers (channels).

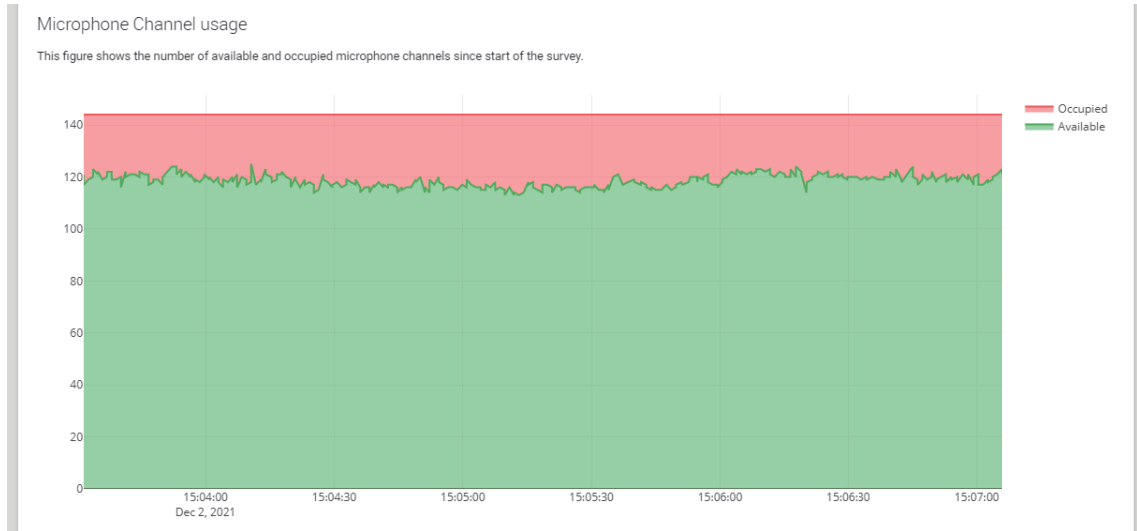
#### ② Estimated number of microphones that can be installed in the vicinity

This is the estimated number of microphones that can be used in each mode.

High Density Audio Mode	This mode prioritizes the number of microphones.
High Quality Audio Mode	This mode prioritizes microphone sound quality.

## Microphone Channel usage

This graph shows the usage status of bearers (channels) since the start of measurement.

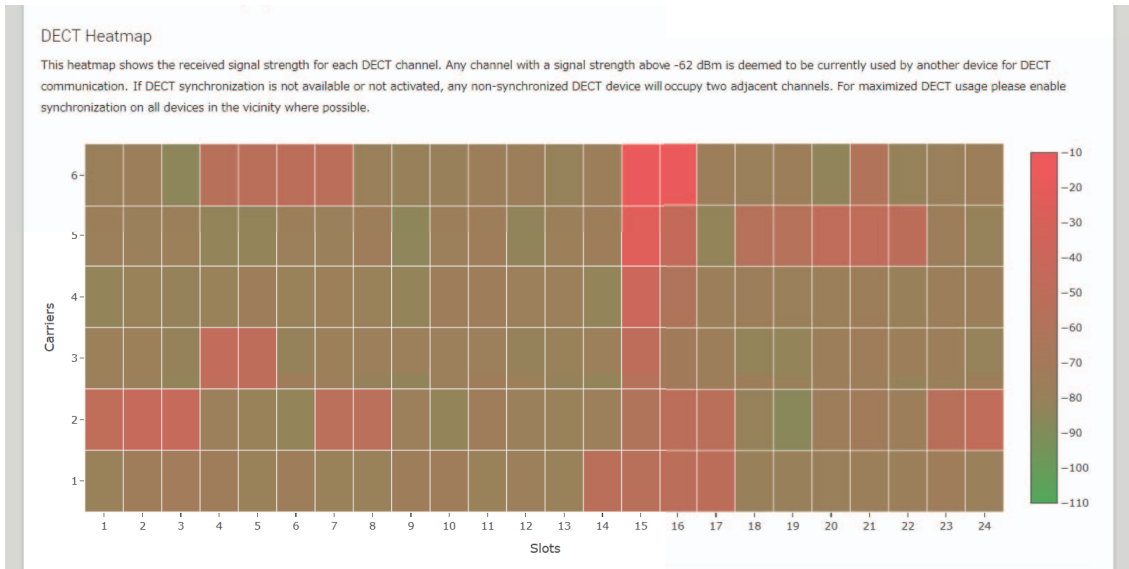


Vertical axis	This indicates the number of bearers (channels).
Horizontal axis	This indicates the time since the start of measurement.
Available	This indicates the number of free bearers (channels).
Occupied	This indicates the number of bearers (channels) in use.

## DECT Heatmap

This heatmap shows the strength of the received signal of each bearer (channel). A color toward red indicates the bearer (channel) is in use; a color toward green indicates that it is not in use.

Hovering the mouse pointer over a bearer displays the RSSI value for the bearer with the corresponding carrier number and slot number.

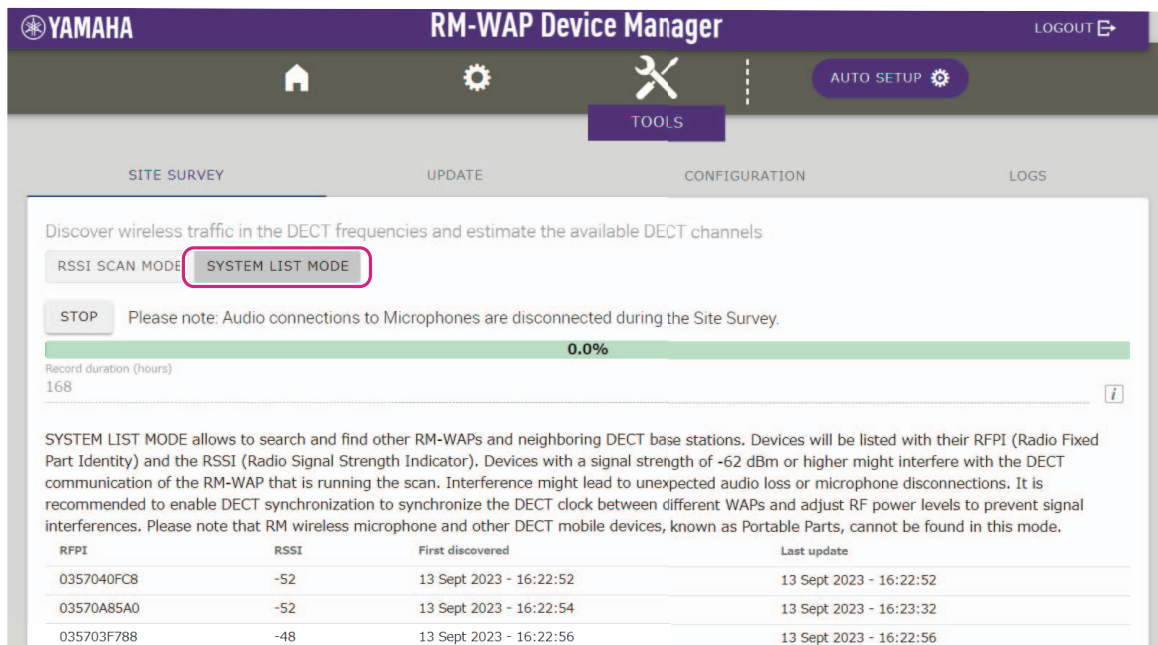


Vertical axis	This indicates the carrier number.
Horizontal axis	This indicates the slot number.

	<p>A bearer (channel) with a signal strength exceeding <math>-62</math> dBm can be concluded to be in use for other DECT communications.</p>
	<p>A bearer (channel) with a signal strength below <math>-62</math> dBm can be concluded not to be in use for DECT communications.</p>

## SYSTEM LIST MODE

In this mode, the DECT base units in the installation environment and their signal strengths can be checked.



<p>RFPI (Radio Fixed Part Identity)</p>	<p>This is the identification number of the access point for DECT communication. Yamaha IDs are "035*****".</p>
<p>RSSI (Received Signal Strength Indicator)</p>	<p>This is the strength of the received signal. Devices with a signal strength greater than <math>-62</math> dBm may interfere with this unit's DECT communications.</p>

**NOTE:** In this mode, RM wireless microphones and other DECT mobile devices will not be detected.

## Increasing the number of microphones that can be used

---

With [RSSI SCAN MODE] in the SITE SURVEY function, you can check the estimated number of microphones that can be used. If the number of microphones that can be used is inadequate, the issue may be resolved by considering the following.

### DECT audio mode

Changing the microphone audio quality changes the number of microphones that can be used.

“High Density” mode allows approximately twice as many microphones to be used as “High Quality” mode.

Setting: [SETTINGS]→[AUDIO]→[DECT Audio Mode]

### DECT synchronization (when using multiple RM-WAPs)

Although this system is designed to prevent interference even when multiple RM-WAPs are used, the bearer (channel) range cannot be used effectively, and the number of bearers (channels) that can be used may be halved. This means fewer microphones can be used. In order to resolve this, synchronize the slot timing. Select [DECT Synchronization] on all RM-WAPs that are to be synchronized.

Setting: [SETTINGS]→[DECT]→[DECT Synchronization]

### RM-WAP signal strength

It is important to suppress signal interference with other DECT devices.

Set the signal strength according to the usage range of the microphone.

Setting: [SETTINGS]→[DECT]→[RF Power Levels]

### RM-WAP installation location

It is important to suppress signal interference with other DECT devices.

If RM-WAP is receiving strong signals from other DECT devices, move it away from those devices. Take into account devices not only in the same room, but also in neighboring rooms as well as on floors above and below.

The strength of signals received from other DECT devices can be checked via [TOOLS]→[SITE SURVEY]→[SYSTEM LIST MODE] in RM-WAP Device Manager.

## Updating the firmware

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There are multiple ways to update the firmware.

### Using RM Device Finder

RM Device Finder is application software for detecting and controlling ADECIA devices on the network. It can also be used to update the firmware of each device.

For operating procedures, refer to the RM Device Finder User Guide included with RM Device Finder.

### Using the Web GUI “RM-WAP Device Manager”

Firmware can be updated via [TOOLS]→[UPDATE]→[Upload New Firmware]/[Firmware Update] in the Web GUI “RM-WAP Device Manager”.

For operating procedures, refer to the RM Series Wireless Microphone System Web GUI Device Manager Operation Guide.

### Using the Web GUI “RM-CR Device Manager”

By using the Web GUI “RM-CR Device Manager”, it is possible to update the firmware of RM-WAP at the same time as the firmware of RM-CR.

Firmware can be updated via [TOOLS]→[Update]→[FIRMWARE UPDATE] in the Web GUI “RM-CR Device Manager”. However, only the firmware of RM-WAP can be updated, not the firmware of the charger and microphones.

For operating procedures, refer to the RM-CR RM-CG RM-TT Web GUI Device Manager Operation Guide.

The latest utility software, firmware files and manuals can be downloaded from the following website.

▼ Yamaha website (Downloads)  
<https://download.yamaha.com/>

## Initializing

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There are two ways to initialize an RM-WAP: using the reset button on the unit and using the Web GUI “RM-WAP Device Manager”.

For details on using the reset button on the unit, refer to “CONTROLS AND FUNCTIONS” in this manual.

Alternatively, it can be initialized via [TOOLS]→[Configuration]→[RESET DEFAULTS] in the Web GUI “RM-WAP Device Manager”. For operating procedures, refer to the RM Series Wireless Microphone System Web GUI Device Manager Operation Guide.



# MAIN SPECIFICATIONS

## RM-WAP-16 RM-WAP-8

### General specifications

<b>Dimensions</b>		W 171.2 mm × D 172.5 mm × H 42.8 mm
<b>Weight</b>	<b>RM-WAP-16</b>	812 g (including mounting bracket)
	<b>RM-WAP-8</b>	650 g (including mounting bracket)
<b>Power requirements</b>		PoE (IEEE802.3af), 48 V DC
<b>Maximum power consumption</b>		48 V, 0.2 A
<b>In operation</b>	<b>Temperature</b>	0 °C – 40 °C
	<b>Humidity</b>	20% – 85% (no condensation)
<b>Storage</b>	<b>Temperature</b>	–20 °C – 60 °C
	<b>Humidity</b>	10% – 90% (no condensation)
<b>Indicators</b>		<ul style="list-style-type: none"> <li>• Power</li> <li>• Status</li> <li>• Network port</li> </ul>
<b>Maximum number of connections to RM-CR</b>	<b>RM-WAP-16</b>	1
	<b>RM-WAP-8</b>	2
<b>Maximum number of connected microphones</b>	<b>RM-WAP-16</b>	16 (up to 32 can be paired)
	<b>RM-WAP-8</b>	8 (up to 16 can be paired)
<b>Maximum number of connected chargers (RM-WCH-8)</b>	<b>RM-WAP-16</b>	4
	<b>RM-WAP-8</b>	2
<b>Accessories</b>		<ul style="list-style-type: none"> <li>• Mounting bracket : 1</li> <li>• Owner's Manual : 1</li> </ul>

### Network specifications

<b>Dante/PoE port</b>	<ul style="list-style-type: none"> <li>• Dante audio/Dante control</li> <li>• External control</li> <li>• PoE</li> <li>• Cable requirements: CAT5e or higher, STP</li> </ul>
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### Audio specifications

<b>Sampling rate</b>		48 kHz
<b>Bit depth</b>		24-bit
<b>Audio input/output (Dante)</b>	<b>RM-WAP-16</b>	16 out out 1–out 16: Mic input signals (maximum 16)
	<b>RM-WAP-8</b>	8 out out 1–out 8: Mic input signals (maximum 8)

## Wireless specifications

<b>Supported standard</b>	1.9 GHz DECT standard
<b>Radio frequency</b>	<ul style="list-style-type: none"> <li>• USA/Canada: 1920.0 MHz – 1930.0 MHz</li> <li>• Europe/Northern Europe/UK/Australia/New Zealand/Hong Kong: 1880.0 MHz – 1900.0 MHz</li> <li>• Saudi Arabia/UAE/South Africa/Singapore: 1880.0 MHz – 1900.0 MHz</li> <li>• Japan: 1893.5 MHz – 1906.1 MHz</li> </ul>
<b>Maximum output power (EIRP)</b>	<ul style="list-style-type: none"> <li>• USA/Canada: 20.1 dBm</li> <li>• Europe/Northern Europe/UK/Australia/New Zealand/Hong Kong: 25.9 dBm</li> <li>• Saudi Arabia/UAE/South Africa/Singapore: 23.8 dBm</li> <li>• Japan: 27.0 dBm</li> </ul>
<b>Antenna (built-in)</b>	Supports space diversity
<b>Use</b>	<ul style="list-style-type: none"> <li>• Audio communication and control between access point and microphone</li> <li>• Control between access point and charger</li> </ul>
<b>Maximum coverage distance</b>	50 m (depends on the usage environment)
<b>Encryption method</b>	AES (256-bit)

## RM-WOM RM-WDR RM-WGL RM-WGS

### General specifications

<b>Dimensions</b>	<b>RM-WOM RM-WDR</b>	W 89.0 mm × D 89.0 mm × H 26.0 mm
	<b>RM-WGL</b>	W 89.0 mm × D 89.0 mm × H 308.4 mm
	<b>RM-WGS</b>	W 89.0 mm × D 89.0 mm × H 171.2 mm
<b>Weight</b>	<b>RM-WOM</b>	126 g
	<b>RM-WDR</b>	130 g
	<b>RM-WGL</b>	152 g
	<b>RM-WGS</b>	140 g
<b>Power requirement</b>		RM-WBT (lithium-ion battery) Output: 3.60 V, 2350 mAh
<b>Maximum power consumption</b>		5 V, 0.7 A
<b>In operation</b>	<b>Temperature</b>	0 °C – 40 °C
	<b>Humidity</b>	20% – 85% (no condensation)
<b>In charging</b>	<b>Temperature</b>	5 °C – 40 °C
	<b>Humidity</b>	20% – 85% (no condensation)
<b>Storage</b>	<b>Temperature</b>	–20 °C – 60 °C
	<b>Humidity</b>	10% – 90% (no condensation)
<b>Indicators</b>	<b>RM-WOM RM-WDR</b>	<ul style="list-style-type: none"> <li>• Mic</li> <li>• Battery</li> </ul>
	<b>RM-WGL RM-WGS</b>	<ul style="list-style-type: none"> <li>• Mic</li> <li>• Ring</li> <li>• Battery</li> </ul>
<b>Accessories</b>	<b>RM-WOM RM-WDR</b>	<ul style="list-style-type: none"> <li>• RM-WBT (battery) : 1</li> <li>• Owner's Manual : 1</li> </ul>
	<b>RM-WGL RM-WGS</b>	<ul style="list-style-type: none"> <li>• Windscreen : 1</li> <li>• RM-WBT (battery) : 1</li> <li>• Owner's Manual : 1</li> </ul>

## Audio specifications


<b>Frequency response</b>	160 Hz – 16 kHz (–10 dB)	
<b>Sampling rate</b>	48 kHz	
<b>Bit depth</b>	24-bit	
<b>Latency</b>	30 – 35 ms nominal (no sound processing, High Quality mode) / 110 ms nominal (with sound processing, High Quality mode)	
<b>Maximum input level of SPL (0 dBFS)</b>	<b>RM-WOM</b>	99.4 dB SPL
	<b>RM-WDR</b>	100.2 dB SPL
	<b>RM-WGL</b>	106.2 dB SPL
	<b>RM-WGS</b>	
<b>Self noise</b>	<b>RM-WOM</b>	–23.0 dBA SPL
	<b>RM-WDR</b>	–24.7 dBA SPL
	<b>RM-WGL</b>	–19.3 dBA SPL
	<b>RM-WGS</b>	
<b>SNR (Ref. 94 dB SPL at 1 kHz)</b>	<b>RM-WOM</b>	117.0 dBA
	<b>RM-WDR</b>	118.7 dBA
	<b>RM-WGL</b>	113.3 dBA
	<b>RM-WGS</b>	
<b>Sensitivity</b>	<b>RM-WOM</b>	–5.4 dBFS/Pa
	<b>RM-WDR</b>	–6.2 dBFS/Pa
	<b>RM-WGL</b>	–12.2 dBFS/Pa
	<b>RM-WGS</b>	
<b>Dynamic range</b>	<b>RM-WOM</b>	122.4 dBA
	<b>RM-WDR</b>	124.9 dBA
	<b>RM-WGL</b>	125.5 dBA
	<b>RM-WGS</b>	

## Wireless specifications

<b>Supported standard</b>	1.9 GHz DECT standard
<b>Radio frequency</b>	<ul style="list-style-type: none"> <li>USA/Canada: 1920.0 MHz – 1930.0 MHz</li> <li>Europe/Northern Europe/UK/Australia/New Zealand/Hong Kong: 1880.0 MHz – 1900.0 MHz</li> <li>Saudi Arabia/UAE/South Africa/Singapore: 1880.0 MHz – 1900.0 MHz</li> <li>Japan: 1893.5 MHz – 1906.1 MHz</li> </ul>
<b>Maximum output power (EIRP)</b>	<ul style="list-style-type: none"> <li>USA/Canada: 20.1 dBm</li> <li>Europe/Northern Europe/UK/Australia/New Zealand/Hong Kong: 25.9 dBm</li> <li>Saudi Arabia/UAE/South Africa/Singapore: 23.8 dBm</li> <li>Japan: 27.0 dBm</li> </ul>
<b>Antenna (built-in)</b>	Supports space diversity
<b>Use</b>	Audio communication and control between access point and microphone
<b>Maximum coverage distance</b>	50 m (depends on the usage environment)
<b>Encryption method</b>	AES (256-bit)

## RM-WCH-8

### General specifications

<b>Dimensions</b>	W 304.0 mm × D 188.0 mm × H 41.5 mm
<b>Weight</b>	800 g
<b>Power requirement</b>	P16V2.4A-R (AC adaptor) Output: 16.0 V DC, 2.4 A 
<b>Maximum power consumption</b>	16 V, 2.0 A
<b>In operation</b>	<b>Temperature</b> 0 °C – 40 °C
	<b>Humidity</b> 20% – 85% (no condensation)
<b>Storage</b>	<b>Temperature</b> –20 °C – 60 °C
	<b>Humidity</b> 10% – 90% (no condensation)
<b>Indicator</b>	Activate
<b>Accessories</b>	<ul style="list-style-type: none"><li>• P16V2.4A-R (AC adaptor) : 1</li><li>• Power cord : 1 or 3</li><li>• Owner's Manual : 1</li></ul>

### Wireless specifications

<b>Supported standard</b>	1.9 GHz DECT standard
<b>Radio frequency</b>	<ul style="list-style-type: none"><li>• USA/Canada: 1920.0 MHz – 1930.0 MHz</li><li>• Europe/Northern Europe/UK/Australia/New Zealand/Hong Kong: 1880.0 MHz – 1900.0 MHz</li><li>• Saudi Arabia/UAE/South Africa/Singapore: 1880.0 MHz – 1900.0 MHz</li><li>• Japan: 1893.5 MHz – 1906.1 MHz</li></ul>
<b>Maximum output power (EIRP)</b>	<ul style="list-style-type: none"><li>• USA/Canada: 20.1 dBm</li><li>• Europe/Northern Europe/UK/Australia/New Zealand/Hong Kong: 25.9 dBm</li><li>• Saudi Arabia/UAE/South Africa/Singapore: 23.8 dBm</li><li>• Japan: 27.0 dBm</li></ul>
<b>Antenna (built-in)</b>	Supports space diversity
<b>Use</b>	Control between access point and charger
<b>Maximum coverage distance</b>	50 m (depends on the usage environment)
<b>Encryption method</b>	AES (256-bit)