⊛ YAMAHA

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

CONTENTS

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.

☐	**Web GUI "RM-WAP Device Manager"**	This allows you to use a computer browser to configure and operate this unit.
☐	**RM Device Finder**	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.
☐	**ProVisionaire Design**	This is Windows application software for designing and managing an entire sound system made up of a combination of various devices.
☐	**ProVisionaire Control**	This is Windows application software that allows you to remotely control parameters for various devices from a single control panel.
☐	**ProVisionaire Touch**	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.

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

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

▼ **Yamaha website (Downloads)**

U.S.A. and Canada:
https://uc.yamaha.com/support/

Other Countries:
https://download.yamaha.com/

CONTROLS AND FUNCTIONS

RM-WAP-16 RM-WAP-8

[Front panel]
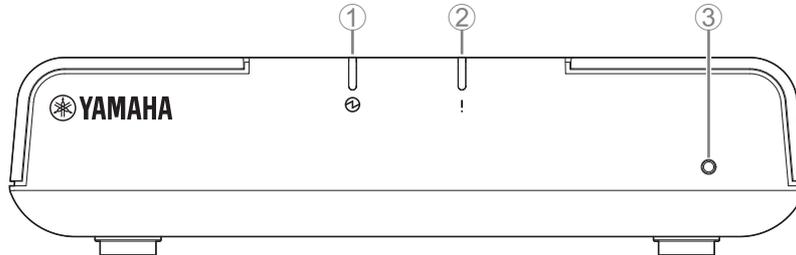
① ⏻ Power indicator

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]
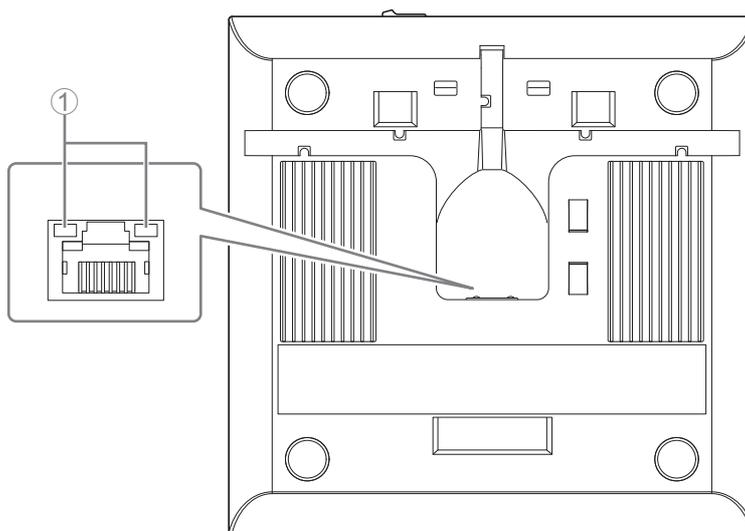
① **Network port indicators (Dante/PoE port)**

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]

RM-WOM   RM-WDR
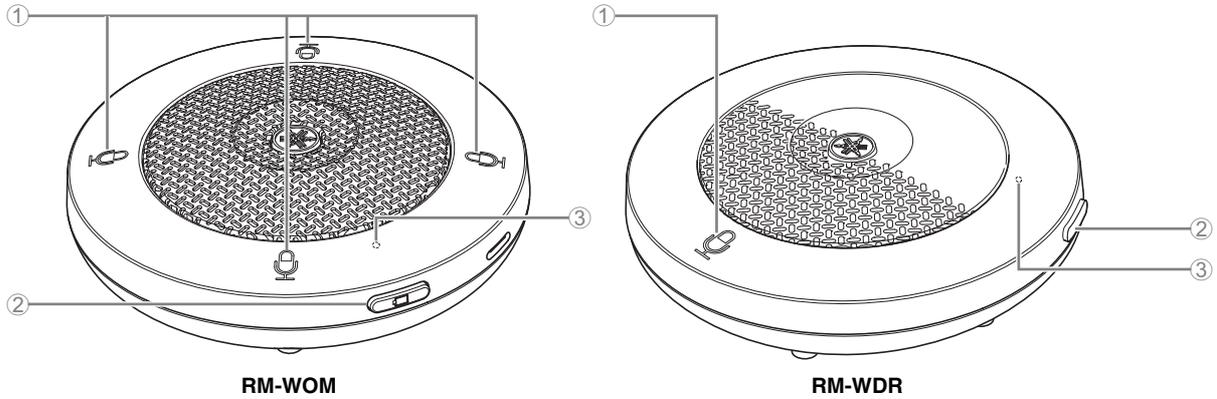
① 🎤 **Mic buttons/indicators**

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]
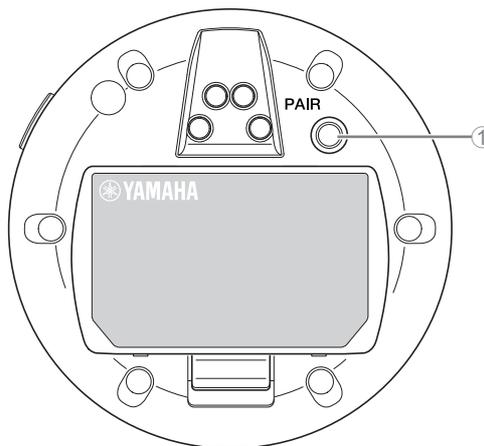
① **PAIR button**

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.

RM-WGL RM-WGS

[Top panel/side panel]

RM-WGL   RM-WGS
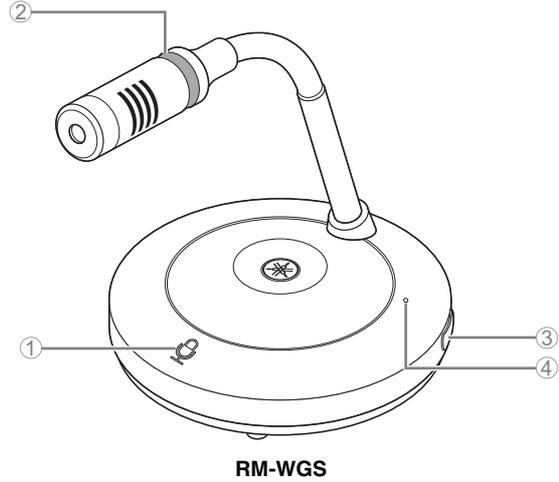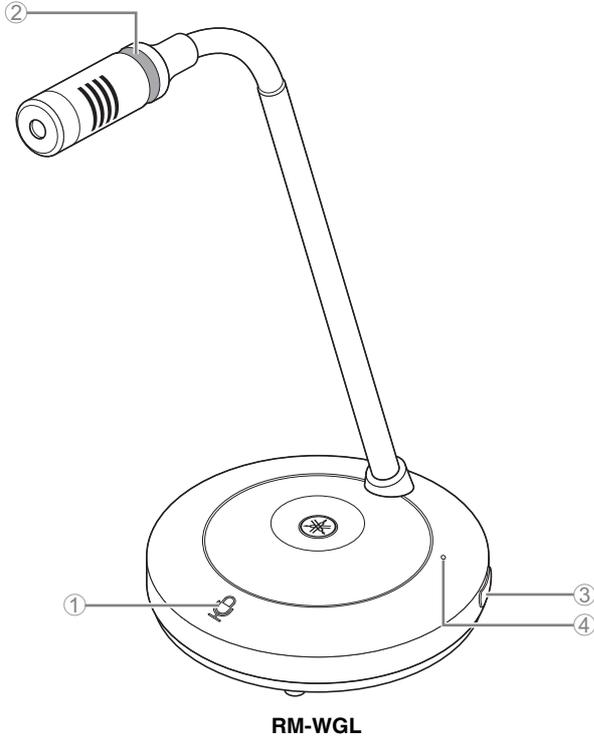
① 🎤 **Mic buttons/indicators**

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.
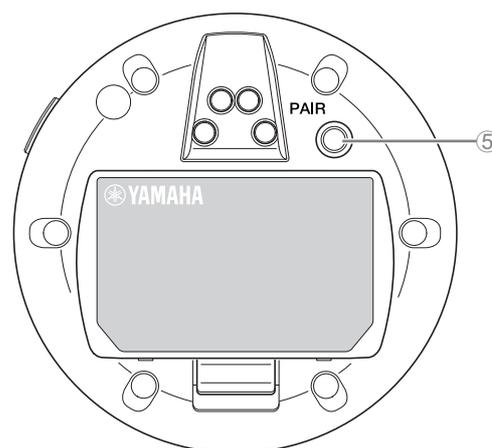
RM-WCH-8

[Top panel]
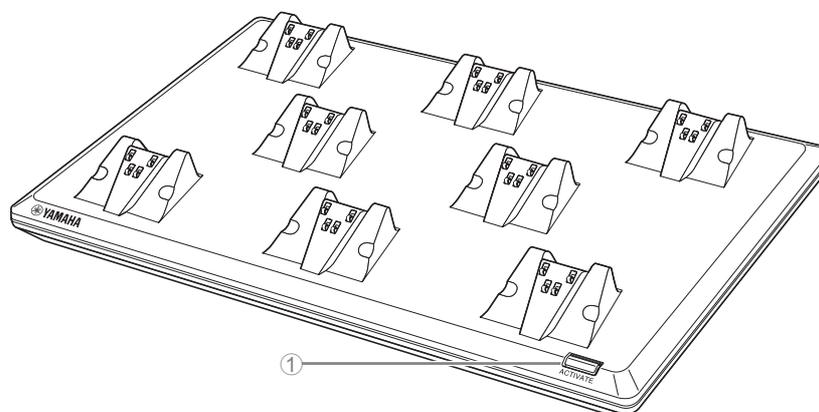
① ACTIVATE button/indicator

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]
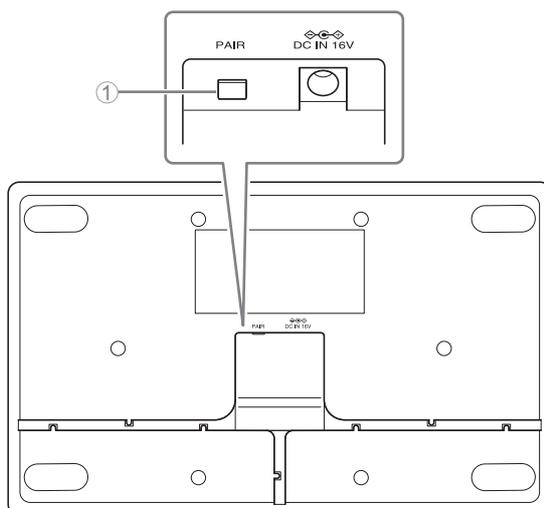
① **PAIR button**

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.

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.**
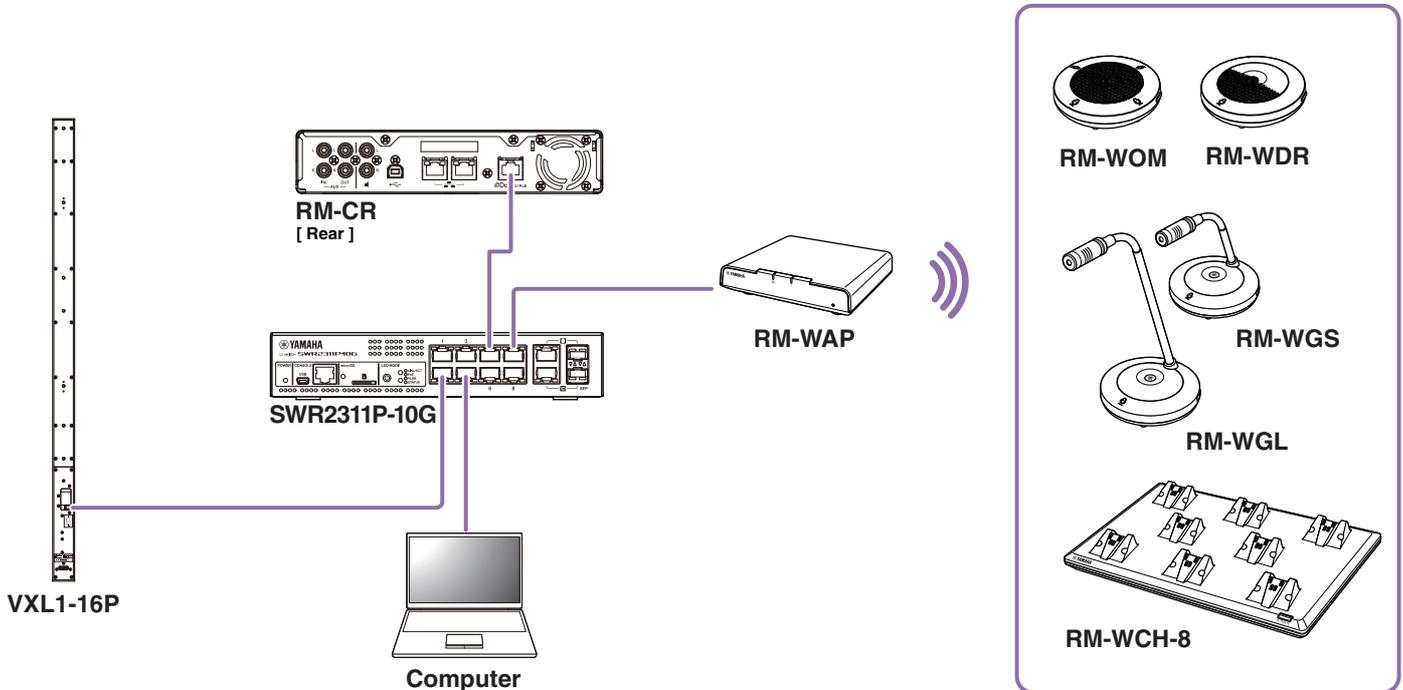
3. Select a network in the [Select Network Interface Card] window, and then click [OK].
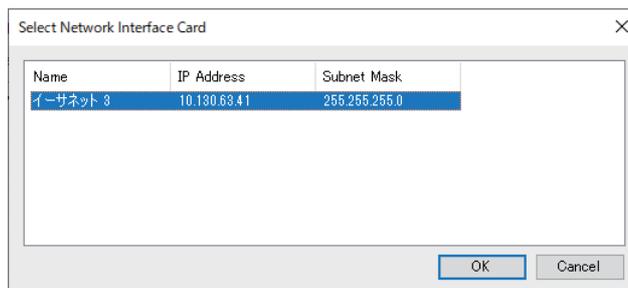
4. Double-click this unit in the [Detected Devices] window. Alternatively, select this unit, and then click the [Browse] button.

The password settings window of RM-WAP Device Manager appears.
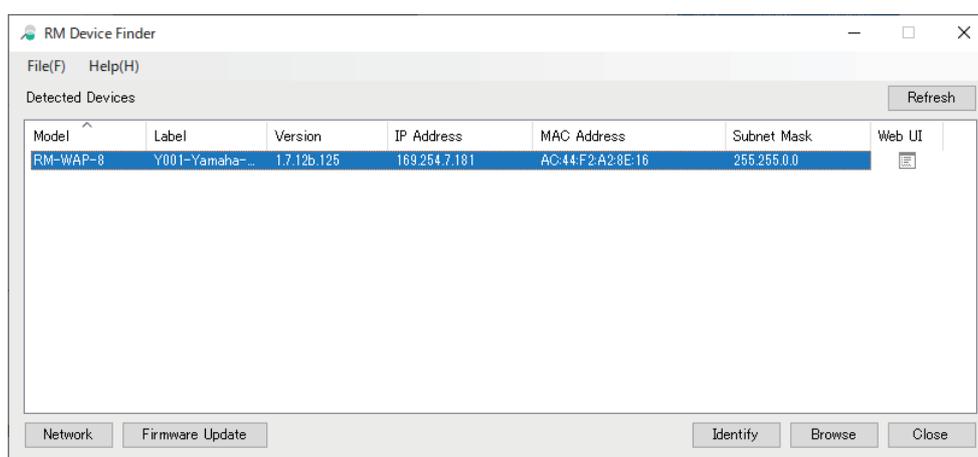
As an example, the RM-WAP-8 is shown in the following screen.

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.**
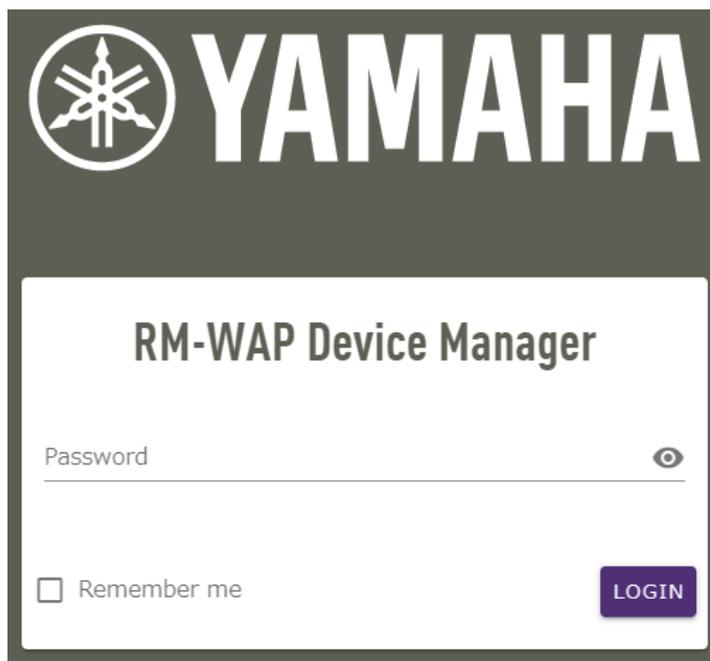
The [HOME] window appears.

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)**

U.S.A. and Canada:
https://uc.yamaha.com/support/

Other Countries:
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.
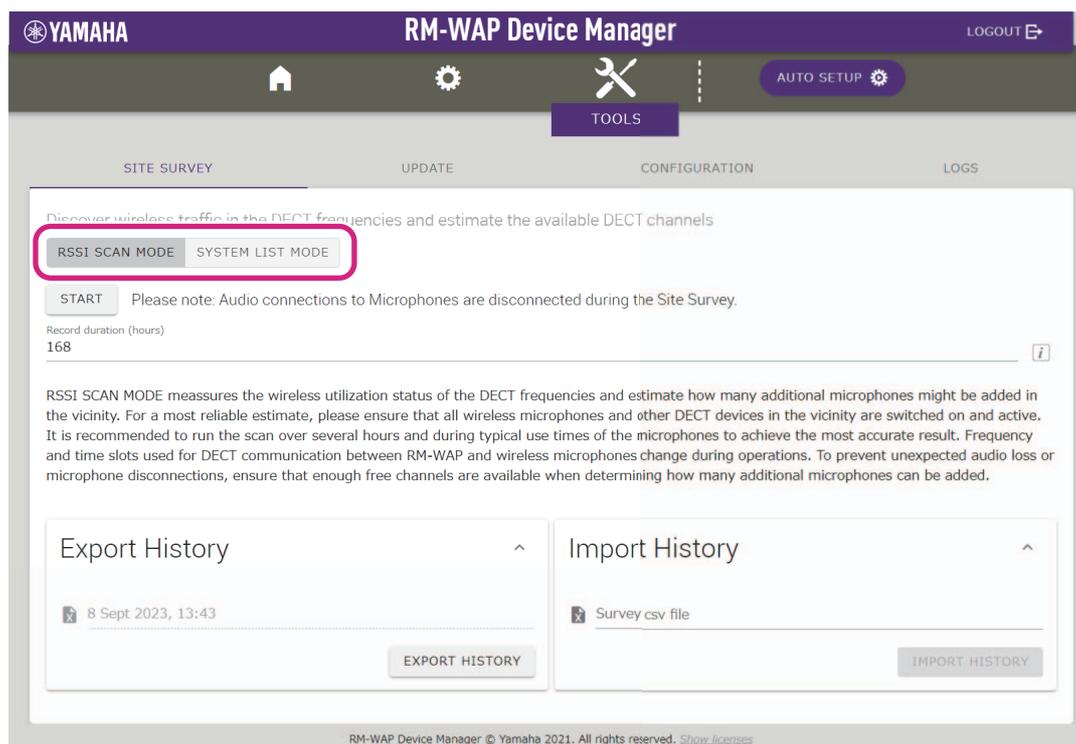
Starting a SITE SURVEY

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.

[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.

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.**
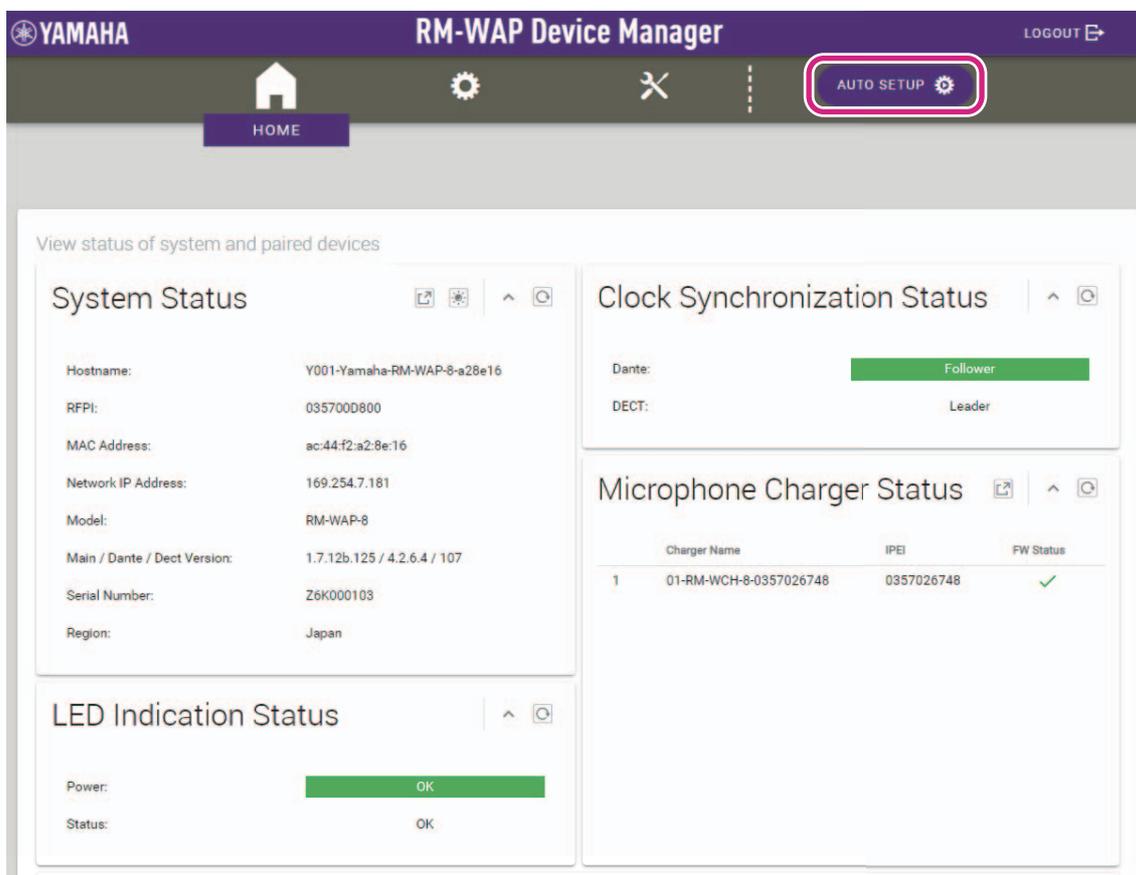
The wizard starts up.

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

[❶ 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.

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.

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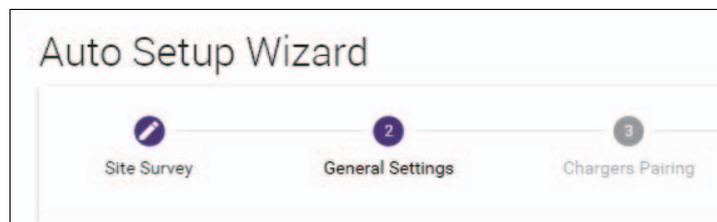
[❷ General Settings]

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

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.

[❸ 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.
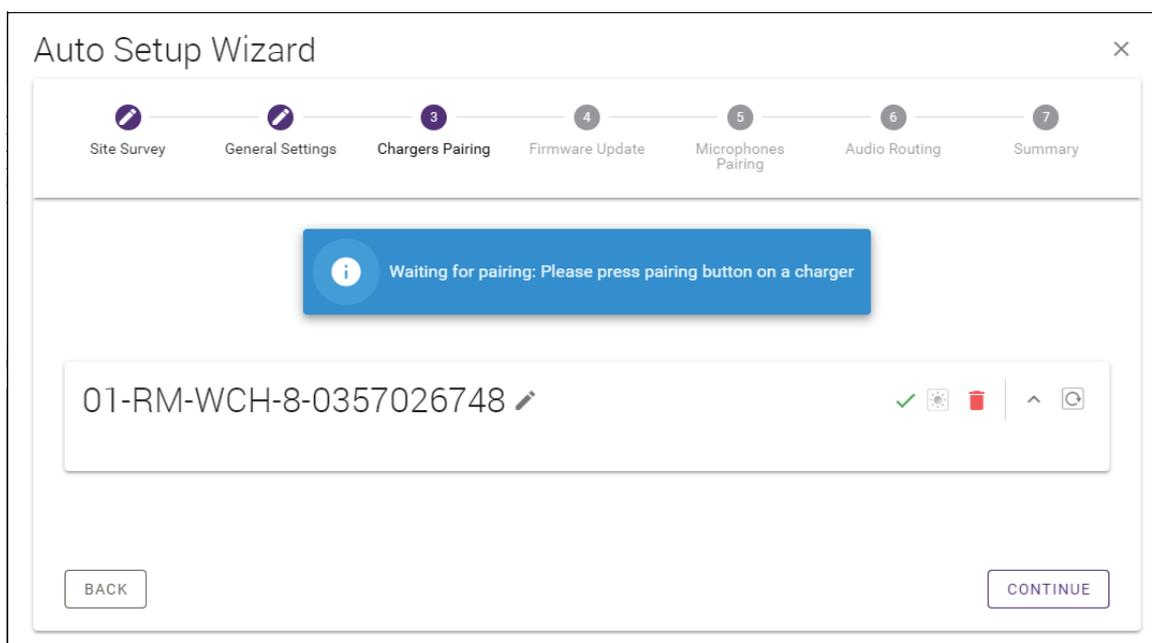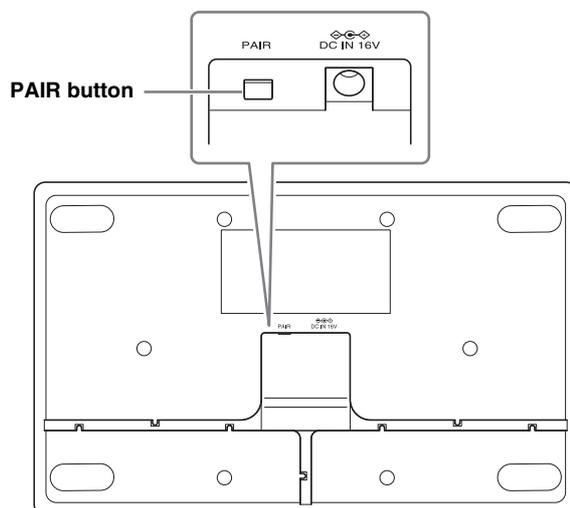
③ **Click the [CONTINUE] button.**

[❹ 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.
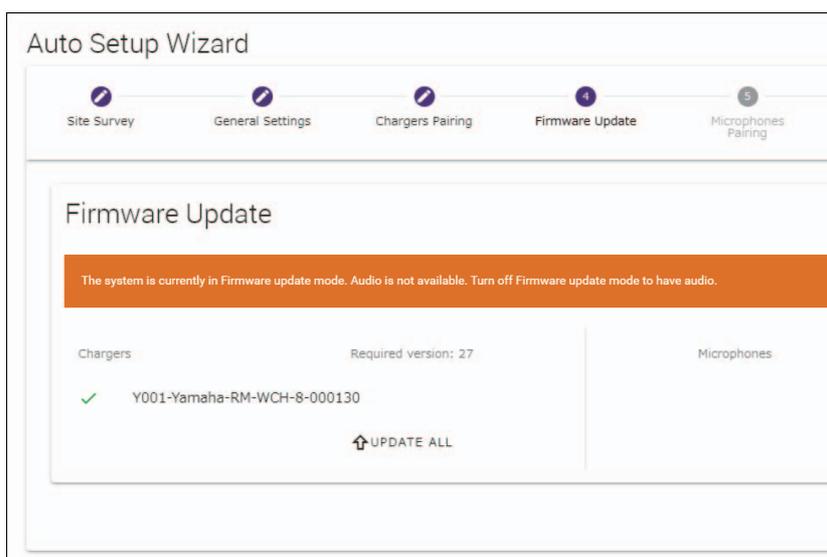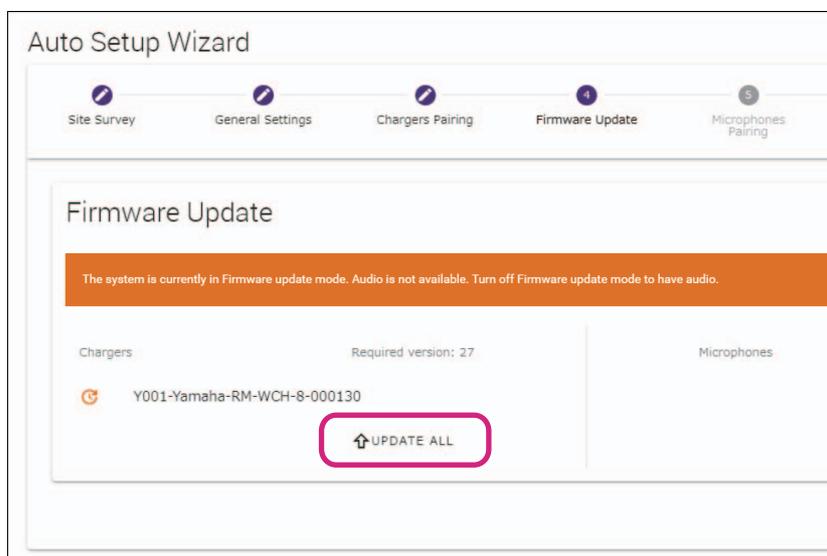
② **Place the microphone(s) on the charger.**
The microphone firmware is updated. During the update, the Mic indicators (on the top panel of the microphone) flashes white quickly. When the update is finished, the indicators go off.

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.**

[❺ Microphones Pairing]

The name(s) of the microphone(s) appear faintly in the window.
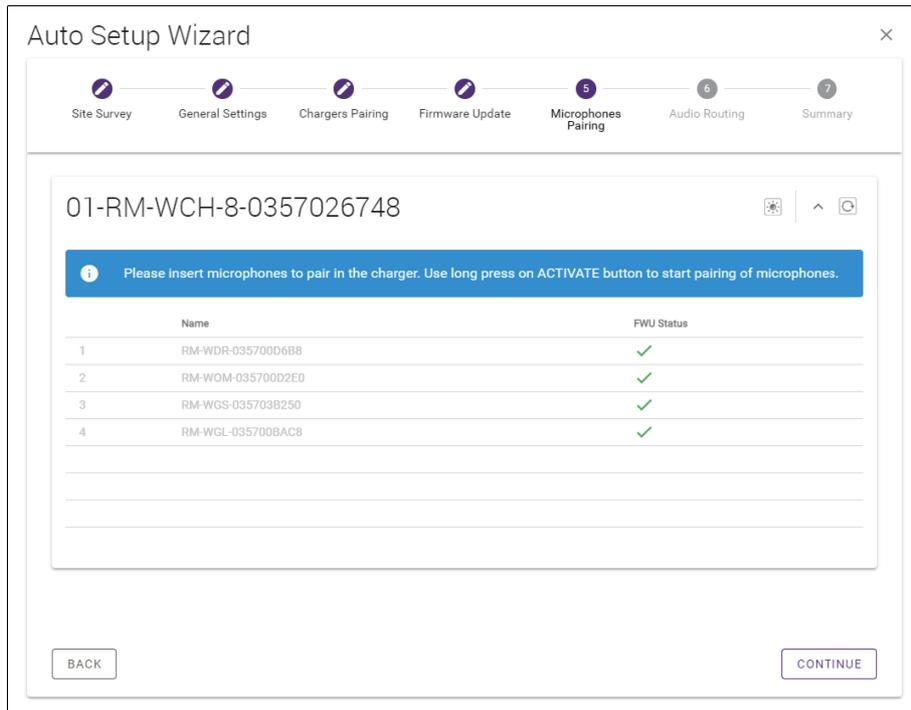
① **Long-press the ACTIVATE button (on the top panel of the charger) for at least two seconds.**
The access point and microphone(s) are paired. When pairing is finished, the name(s) of the microphone(s) change from appearing faintly to appearing in black.

NOTE: All microphones placed on the charger can be paired with a single long press.
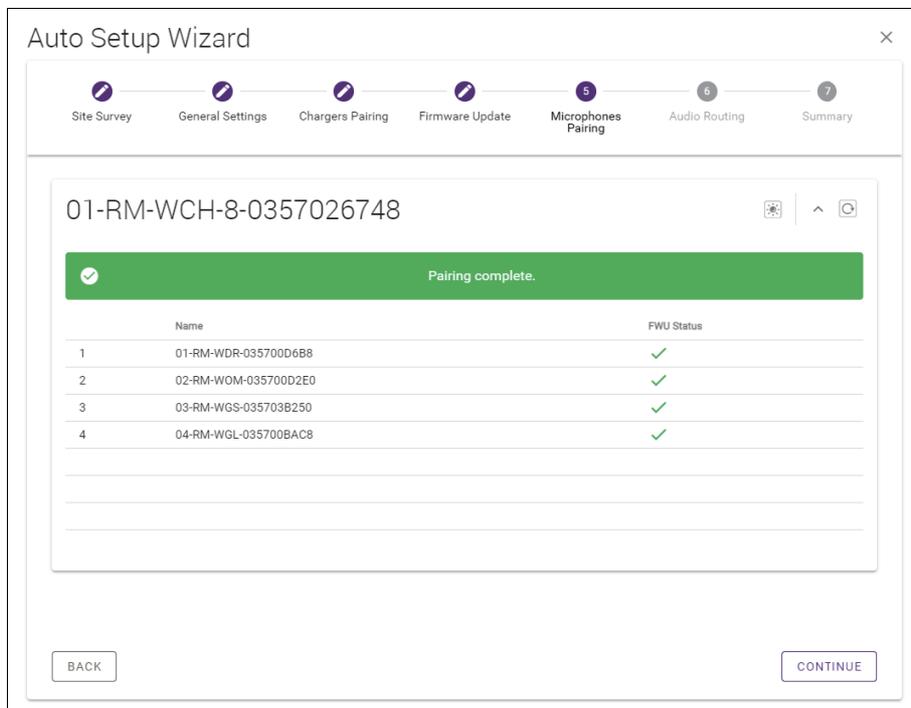
② **Click the [CONTINUE] button.**

[❻ 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.
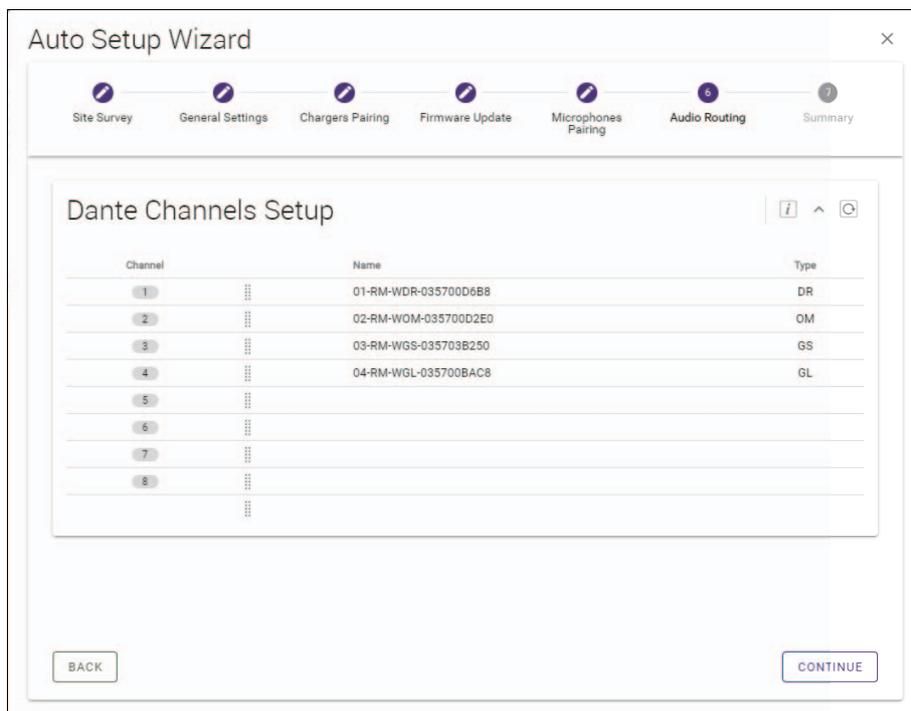
[❼ Summary]

Check the microphone settings, and then click the [FINISH] button.
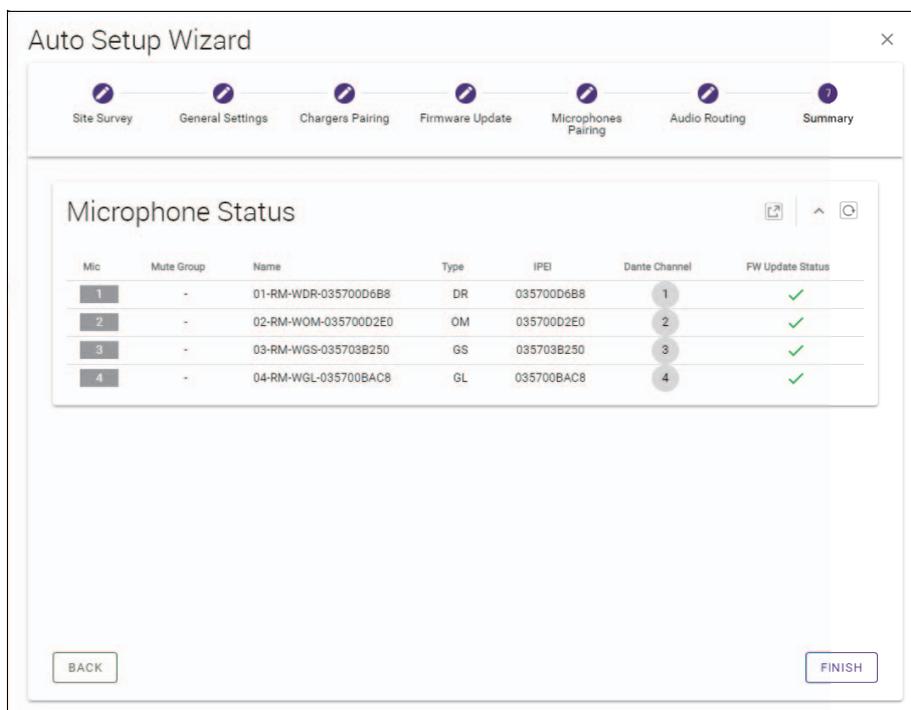
This completes the setup. When a microphone is removed from the charger, a DECT connection between the access point and microphone will be established.

APPENDIX

Block diagram

Reference Signal for AEC

MIC INPUT CHANNEL

Microphone Signal

Max :32 (RM-WAP-16)
Max :16 (RM-WAP-8)

DIGITAL SIGNAL PROCESSING
(Advanced Audio Settings)

Input gain

DIGITAL GAIN

Linear NR

Linear AEC

NLP NR
(Noise reduction)

NLP AEC
(Adaptive echo canceller)

Dereverberation

AGC

6 BAND EQ

Low lantency mode

DIGITAL SIGNAL PROCESSING
(Basic Audio Settings)

HPF

LPF

MUTE

FADER LEVEL

ROUTER

16 (RM-WAP-16)
8 (RM-WAP-8)

DANTE channels setup

INDICATOR

Dante Output

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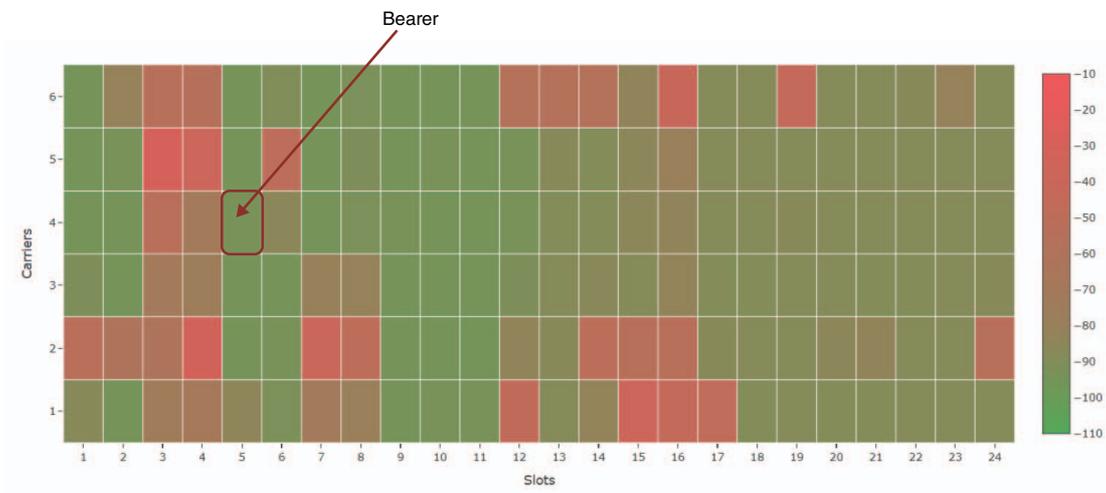
Different regions have different numbers of carriers and, therefore, different numbers of bearers.

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.
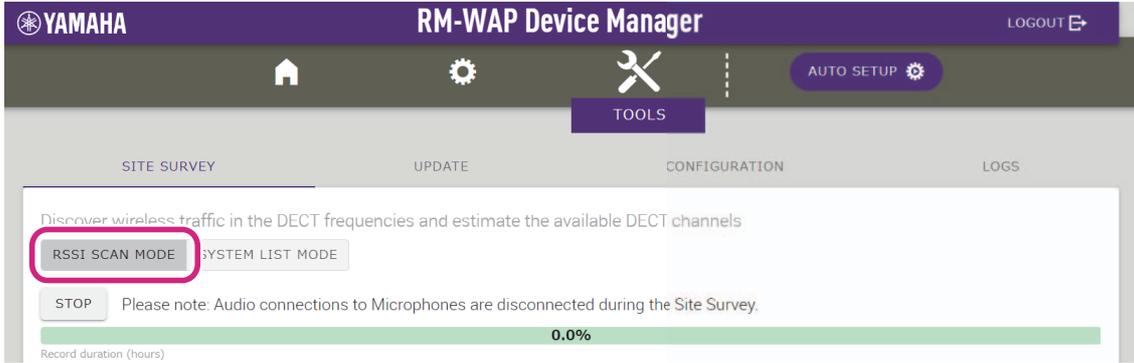
Microphone Capacity Estimate

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

① **Number of bearers (channels)**

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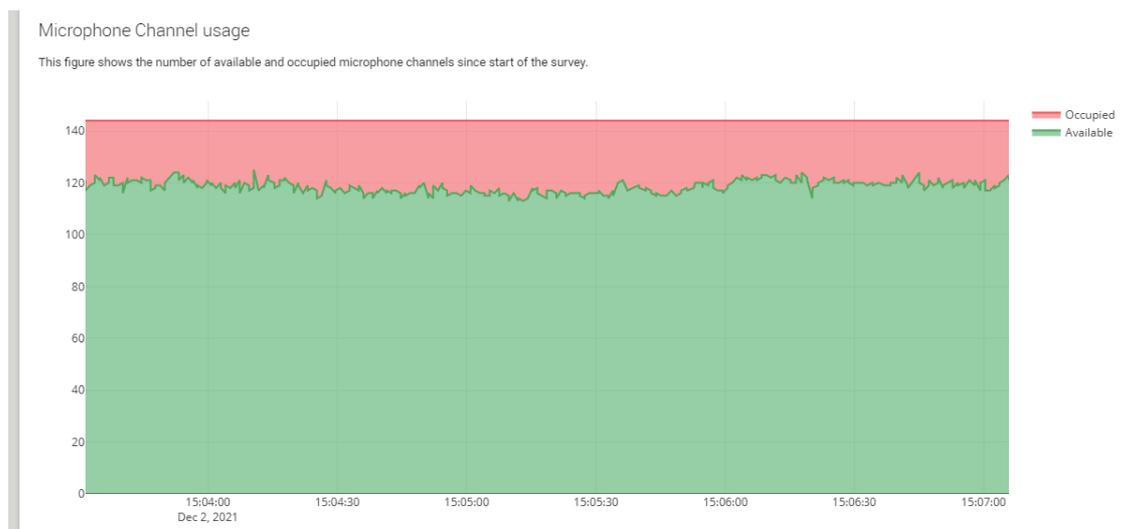
Vertical axis	This indicates the number of bearers (channels).
Horizontal axis	This indicates the time since the start of measurement.
🟩 Available	This indicates the number of free bearers (channels).
🟥 Occupied	This indicates the number of bearers (channels) in use.

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.
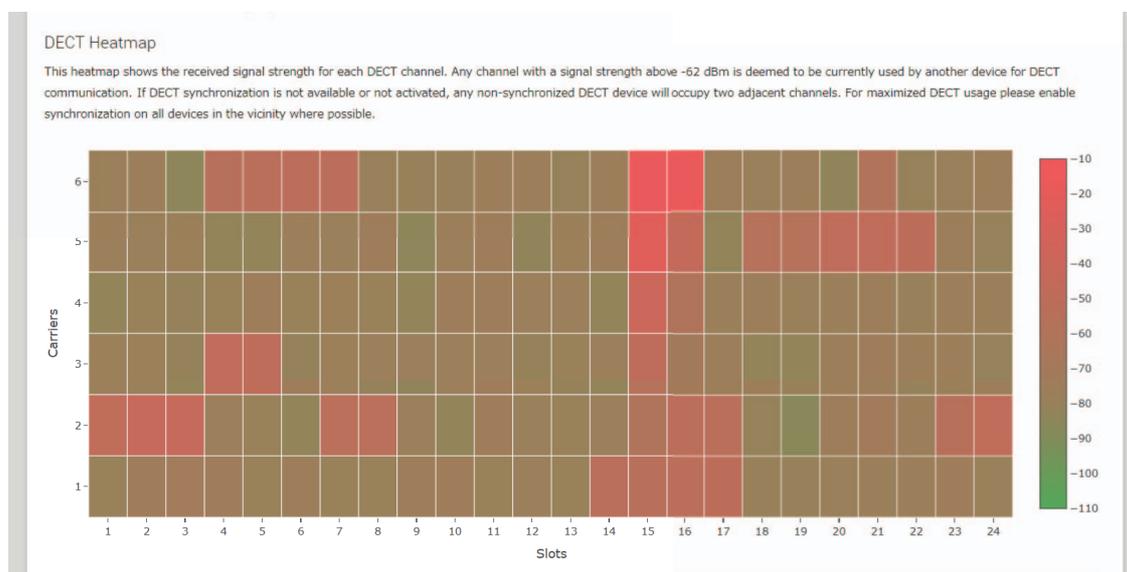
Vertical axis	This indicates the carrier number.
Horizontal axis	This indicates the slot number.
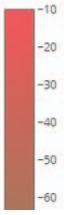
	A bearer (channel) with a signal strength exceeding –62 dBm can be concluded to be in use for other DECT communications.
	A bearer (channel) with a signal strength below –62 dBm can be concluded not to be in use for DECT communications.
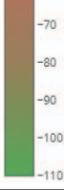
SYSTEM LIST MODE

In this mode, the DECT base units in the installation environment and their signal strengths can be checked.
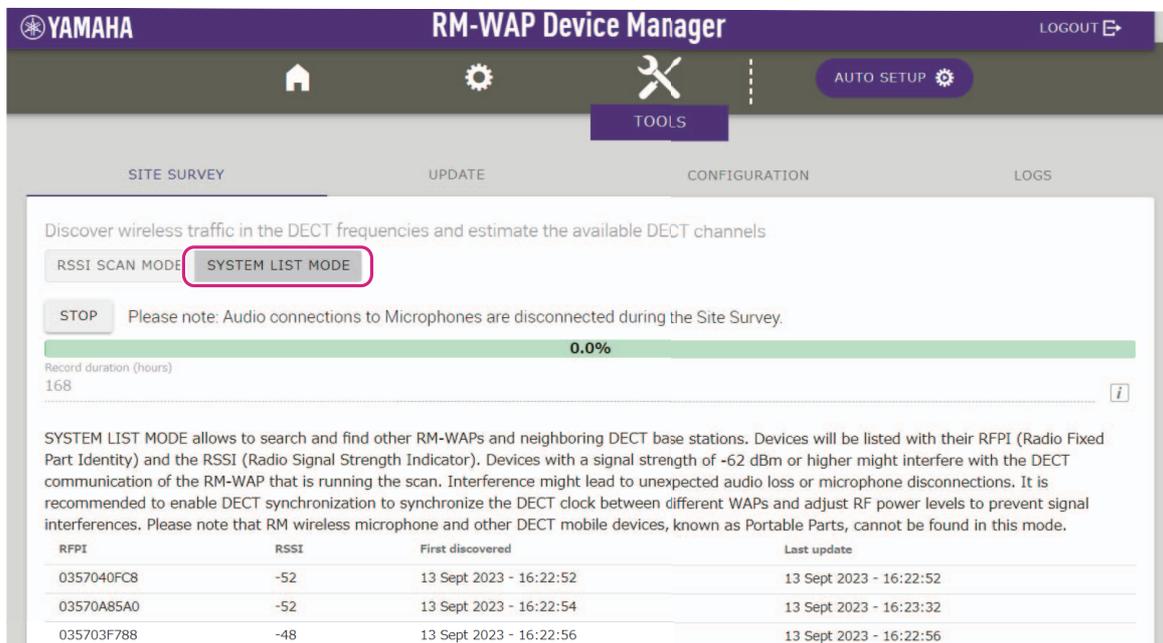
RFPI (Radio Fixed Part Identity)	This is the identification number of the access point for DECT communication. Yamaha IDs are "035*******".
RSSI (Received Signal Strength Indicator)	This is the strength of the received signal. Devices with a signal strength greater than –62 dBm may interfere with this unit's DECT communications.

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

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)

U.S.A. and Canada:
https://uc.yamaha.com/support/

Other Countries:
https://download.yamaha.com/

Initializing

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

Dimensions		W 171.2 mm × D 172.5 mm × H 42.8 mm
Weight	**RM-WAP-16**	812 g (including mounting bracket)
	RM-WAP-8	650 g (including mounting bracket)
Power requirements		PoE (IEEE802.3af), 48 V DC
Maximum power consumption		48 V, 0.2 A
In operation	**Temperature**	0 °C – 40 °C
	Humidity	20% – 85% (no condensation)
Storage	**Temperature**	–20 °C – 60 °C
	Humidity	10% – 90% (no condensation)
Indicators		• Power • Status • Network port
Maximum number of connections to RM-CR	**RM-WAP-16**	1
	RM-WAP-8	2
Maximum number of connected microphones	**RM-WAP-16**	16 (up to 32 can be paired)
	RM-WAP-8	8 (up to 16 can be paired)
Maximum number of connected chargers (RM-WCH-8)	**RM-WAP-16**	4
	RM-WAP-8	2
Accessories		• Mounting bracket : 1 • Owner's Manual : 1

Network specifications

Dante/PoE port	• Dante audio/Dante control • External control • PoE • Cable requirements: CAT5e or higher, STP

Audio specifications

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

Wireless specifications

Supported standard	1.9 GHz DECT standard
Radio frequency	• USA/Canada: 1920.0 MHz – 1930.0 MHz • Europe/Northern Europe/UK/Australia/New Zealand: 1880.0 MHz – 1900.0 MHz • Japan: 1893.5 MHz – 1906.1 MHz
Maximum output power (EIRP)	• USA/Canada: 20.1 dBm • Europe/Northern Europe/UK/Australia/New Zealand: 25.9 dBm • Japan: 27.0 dBm
Antenna (built-in)	Supports space diversity
Use	• Audio communication and control between access point and microphone • Control between access point and charger
Maximum coverage distance	50 m (depends on the usage environment)
Encryption method	AES (256-bit)

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

General specifications

Dimensions	**RM-WOM** **RM-WDR**	W 89.0 mm × D 89.0 mm × H 26.0 mm
	RM-WGL	W 89.0 mm × D 89.0 mm × H 308.4 mm
	RM-WGS	W 89.0 mm × D 89.0 mm × H 171.2 mm
Weight	**RM-WOM**	126 g
	RM-WDR	130 g
	RM-WGL	152 g
	RM-WGS	140 g
Power requirement		RM-WBT (lithium-ion battery) Output: 3.60 V, 2350 mAh
Maximum power consumption		5 V, 0.7 A
In operation	**Temperature**	0 °C – 40 °C
	Humidity	20% – 85% (no condensation)
In charging	**Temperature**	5 °C – 40 °C
	Humidity	20% – 85% (no condensation)
Storage	**Temperature**	–20 °C – 60 °C
	Humidity	10% – 90% (no condensation)
Indicators	**RM-WOM** **RM-WDR**	• Mic • Battery
	RM-WGL **RM-WGS**	• Mic • Ring • Battery
Accessories	**RM-WOM** **RM-WDR**	• RM-WBT (battery) : 1 • Owner's Manual : 1
	RM-WGL **RM-WGS**	• Windscreen : 1 • RM-WBT (battery) : 1 • Owner's Manual : 1

Audio specifications

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

Wireless specifications

Supported standard	1.9 GHz DECT standard
Radio frequency	• USA/Canada: 1920.0 MHz – 1930.0 MHz • Europe/Northern Europe/UK/Australia/New Zealand: 1880.0 MHz – 1900.0 MHz • Japan: 1893.5 MHz – 1906.1 MHz
Maximum output power (EIRP)	• USA/Canada: 20.1 dBm • Europe/Northern Europe/UK/Australia/New Zealand: 25.9 dBm • Japan: 27.0 dBm
Antenna (built-in)	Supports space diversity
Use	Audio communication and control between access point and microphone
Maximum coverage distance	50 m (depends on the usage environment)
Encryption method	AES (256-bit)

RM-WCH-8

General specifications

Dimensions		W 304.0 mm × D 188.0 mm × H 41.5 mm
Weight		800 g
Power requirement		P16V2.4A-R (AC adaptor)
		Output: 16.0 V DC, 2.4 A ◇–C–◇
Maximum power consumption		16 V, 2.0 A
In operation	Temperature	0 °C – 40 °C
	Humidity	20% – 85% (no condensation)
Storage	Temperature	–20 °C – 60 °C
	Humidity	10% – 90% (no condensation)
Indicator		Activate
Accessories		• P16V2.4A-R (AC adaptor) : 1
		• Power cord : 1 or 3
		• Owner's Manual : 1

Wireless specifications

Supported standard	1.9 GHz DECT standard
Radio frequency	• USA/Canada: 1920.0 MHz – 1930.0 MHz
	• Europe/Northern Europe/UK/Australia/New Zealand: 1880.0 MHz – 1900.0 MHz
	• Japan: 1893.5 MHz – 1906.1 MHz
Maximum output power (EIRP)	• USA/Canada: 20.1 dBm
	• Europe/Northern Europe/UK/Australia/New Zealand: 25.9 dBm
	• Japan: 27.0 dBm
Antenna (built-in)	Supports space diversity
Use	Control between access point and charger
Maximum coverage distance	50 m (depends on the usage environment)
Encryption method	AES (256-bit)