



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.....	1
INTRODUCTION.....	2
Available utility software	2
Available manuals.....	2
CONTROLS AND FUNCTIONS	3
RM-WAP-16 RM-WAP-8	3
RM-WOM RM-WDR	5
RM-WGL RM-WGS	8
RM-WCH-8	9
INSTALLATION AND SETUP	11
AVAILABLE UTILITY SOFTWARE.....	12
Starting up the Web GUI Device Manager	12
Using the SITE SURVEY function	15
Using the AUTO SETUP function	18
APPENDIX	27
Block diagram (ADECIA firmware version 3.0 or later).....	27
EXPLANATIONS	29
About DECT.....	29
Understanding the [SITE SURVEY] window.....	31
Increasing the number of microphones that can be used.....	34
Updating the firmware.....	35
Initializing	35
MAIN SPECIFICATIONS	36
RM-WAP-16 RM-WAP-8	36
RM-WOM RM-WDR RM-WGL RM-WGS	38
RM-WCH-8	39

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"/> Web GUI “RM-WAP Device Manager” | This allows you to use a computer browser to configure and operate this unit. |
| <input type="checkbox"/> 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. |
| <input type="checkbox"/> ProVisionaire Design | This is Windows application software for designing and managing an entire sound system made up of a combination of various devices. |
| <input type="checkbox"/> ProVisionaire Kiosk | This is software that allows you to control parameters for various devices from a single control panel. It runs on a Windows computer or iPad/iPhone. |
| <input type="checkbox"/> ProVisionaire Control PLUS | This is Windows software for designing ProVisionaire Kiosk controllers. |

Available manuals

This describes the manuals related to this product.

- | | |
|--|---|
| <input type="checkbox"/> RM-WAP Owner's Manual (included) | This contains the precautions for using this unit safely as well as the installation procedure. |
| <input type="checkbox"/> RM-WOM Owner's Manual (included) | |
| <input type="checkbox"/> RM-WCH Owner's Manual (included) | |
| <input type="checkbox"/> RM-WBT Owner's Manual (included) | |
| <input checked="" type="checkbox"/> RM Series Wireless Microphone System Reference Manual (this manual/PDF) | This provides details on connecting and using this unit. |
| <input type="checkbox"/> 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. |
| <input type="checkbox"/> RM Series Remote Control Protocol Specifications | This provides details on command information for acquiring and controlling information about this unit from external devices. |
| <input type="checkbox"/> ProVisionaire Design User Guide | This provides details on using ProVisionaire Design. |
| <input type="checkbox"/> ProVisionaire Kiosk User Guide | This provides details on using ProVisionaire Kiosk. |
| <input type="checkbox"/> ProVisionaire Control PLUS Setup Guide | This provides details on using ProVisionaire Control PLUS. |

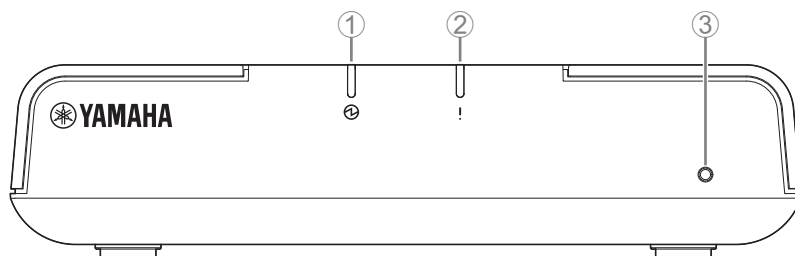
Software and manuals related to this product can be downloaded from the following website.

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





CONTROLS AND FUNCTIONS

RM-WAP-16 RM-WAP-8










[Front panel]



① Power indicator

Category	Indicator	Color/lighting status		Description
Other		Green	Lit	Operating
Notifications/alerts		Red	Flashing quickly	System error occurring
		Red	Flashing	Transmission error occurring
Reboot		Red	Lit	The unit started rebooting after one of the following resets <ul style="list-style-type: none"> • Network-related settings • All settings

② Status indicator

Category	Indicator	Color/lighting status		Description
Reset		Blue	Flashing	Waiting for resetting <ul style="list-style-type: none"> • Network-related settings • All settings
FW Update		White	Flashing quickly	Firmware being updated
		White	Flashing twice	Firmware updated successfully
		Red	Flashing twice	Firmware update failed
Pairing		Blue	Flashing quickly	Waiting for pairing/Pairing
		Blue	Flashing twice	Paired successfully
		Red	Flashing twice	Pairing failed
Notifications/alerts		White	Flashing	Responding (to Identify function)
Other		Unlit		Unit not turned on

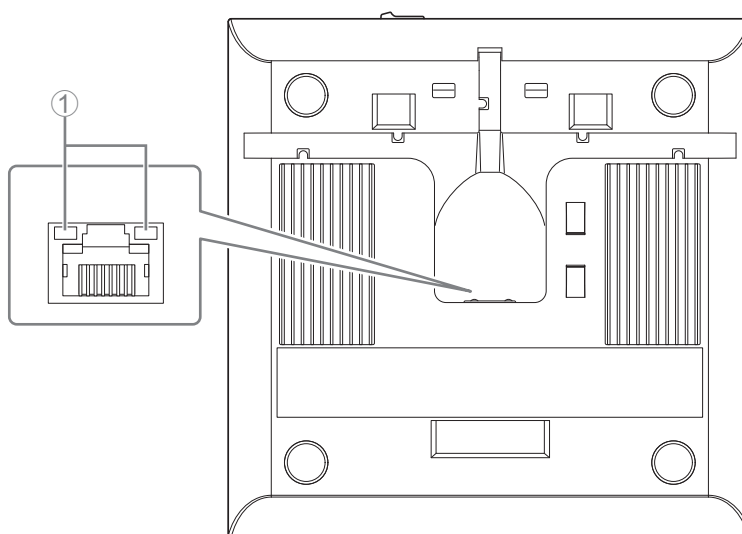
NOTE: You will be notified after the system has restarted.

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)

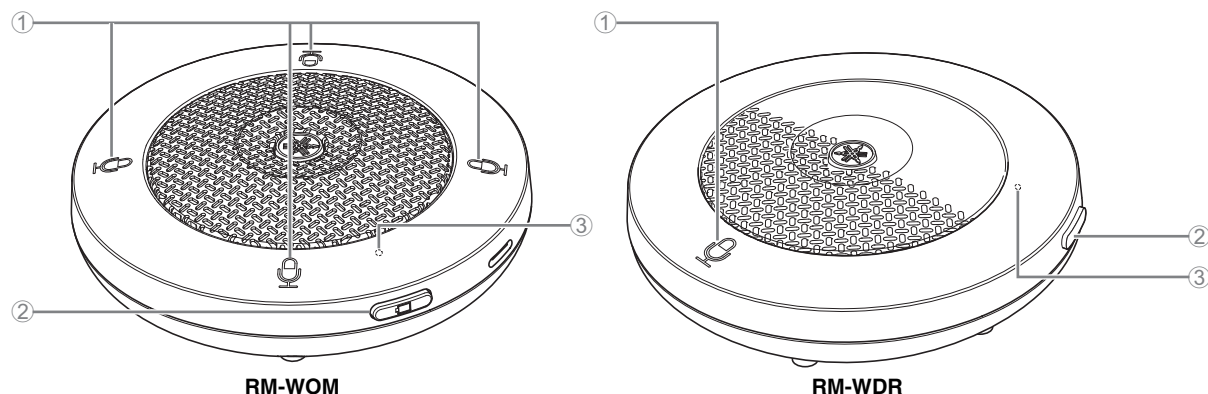
Network port indicator	Unit status
Left indicator lit green	Link up
Left indicator flashes green	Transferring data
Left indicator unlit	Link down
Right indicator lit green	Operating on word clock of peripheral device (leader)
Right indicator flashes green	Acting as word-clock leader
Right indicator flashes 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	Indicator	Color/lighting status		Description
Mic button touched		Green	Lit	Microphone unmuted
		Red	Lit (Flashes every 2 seconds)	Microphone muted

NOTE: The unit must be paired with an access point and have a wireless connection.

Category	Indicator	Color/lighting status		Description
FW Update		White	Flashing quickly	Firmware being updated
		White	Flashing twice	Firmware updated successfully
		Red	Flashing twice	Firmware update failed
Pairing		Blue	Flashing quickly	Waiting for pairing/Pairing
		Blue	Flashing twice	Paired successfully
		Red	Flashing twice	Pairing failed
Notifications/alerts		White	Flashing	Responding (to Identify function)
		Red	Flashing quickly	System error occurring
		Red	Flashing	Transmission error occurring
		Red	Flashing slowly	Out of range for DECT connection
Mute		Green	Lit	Microphone unmuted
		Red	Lit (Flashes every 2 seconds)	Microphone muted
Other		White	Lit	Not in use (connected to RM-CR)
		Unlit		Unit not turned on

NOTE: *1 You will be notified after the system has restarted.

*2 [SETTINGS] → [Admin] → [LED INDICATION SETTINGS] in the Web GUI “RM-CR Device Manager”
Refer to the RM-CR RM-CG RM-TT Web GUI Device Manager Operation Guide.

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

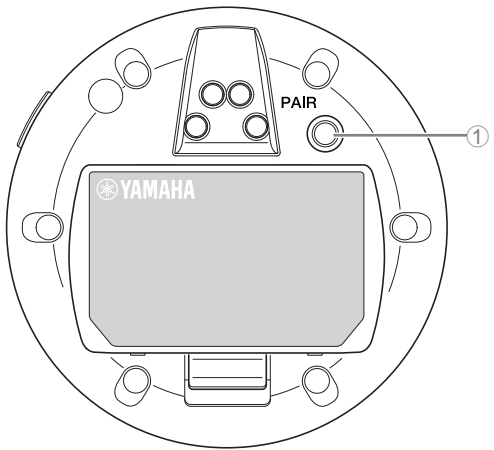
IMPORTANT: • The microphone is pre-installed with an RM-WBT battery. In order to maintain battery capacity, charge the microphone (battery) once every six months.

- 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]

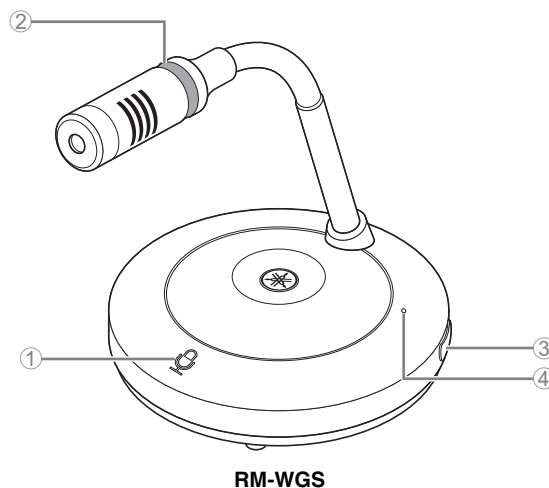
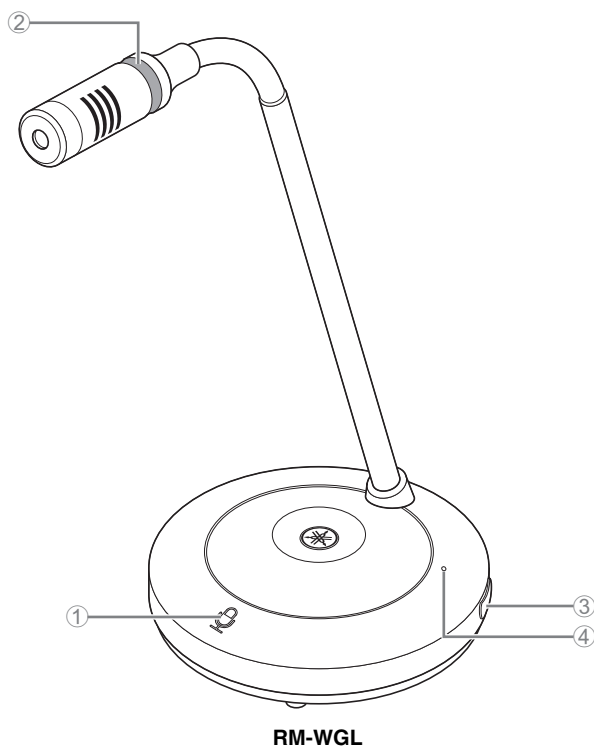


① PAIR button





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		Indicator	Color/lighting status		Description
Toggle mode	Mic button touched		Green	Lit	Microphone unmuted
			Red	Lit (Flashes every 2 seconds)	Microphone muted
Push to talk mode	Mic button touched continuously		Green	Lit	Microphone unmuted while the button is touched
	Mic button released		Red	Lit (Flashes every 2 seconds)	Microphone muted

NOTE:

- The unit must be paired with an access point and have a wireless connection.
- The Mic button operates in Toggle mode or Push to talk mode.
In Toggle mode, pressing the button switches between muting and unmuting the microphone.
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.
The setting can be changed via the following.
[SETTINGS] → [MICROPHONE] → [Microphones] → [Mic Button Behavior] in the Web GUI “RM-WAP Device Manager”

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

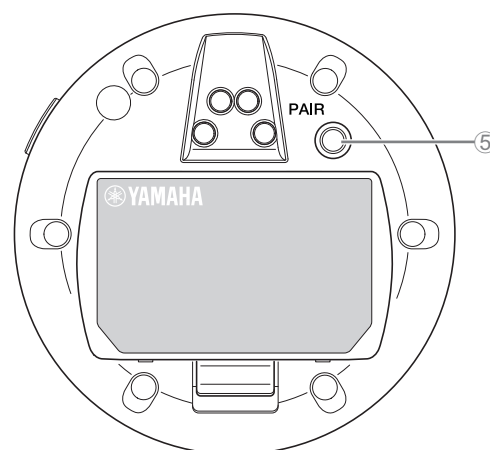
② Ring indicator

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.



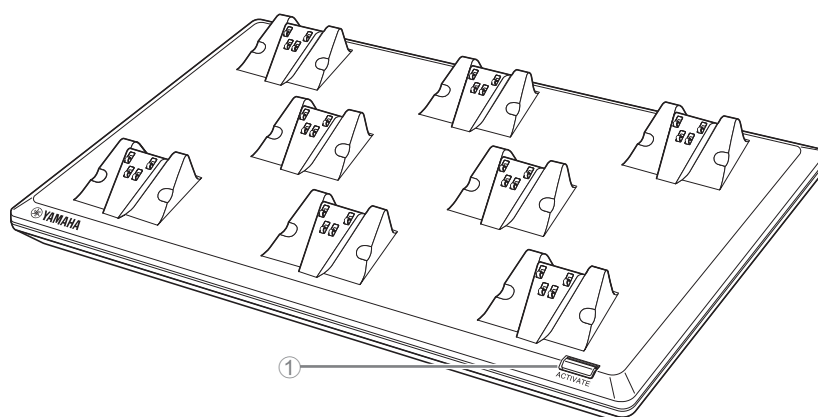
[Bottom panel]

⑤ PAIR button

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

RM-WCH-8

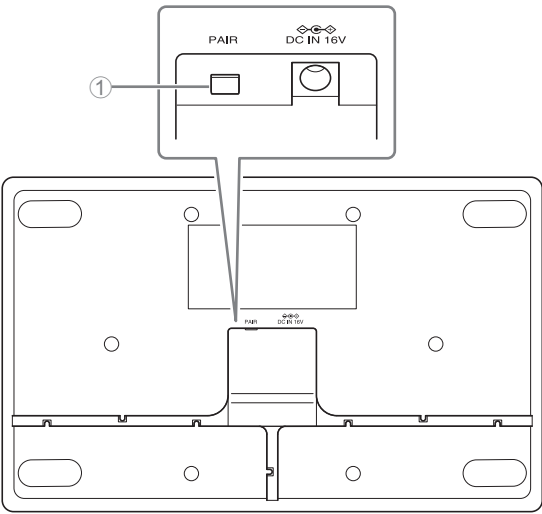
[Top panel]



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.

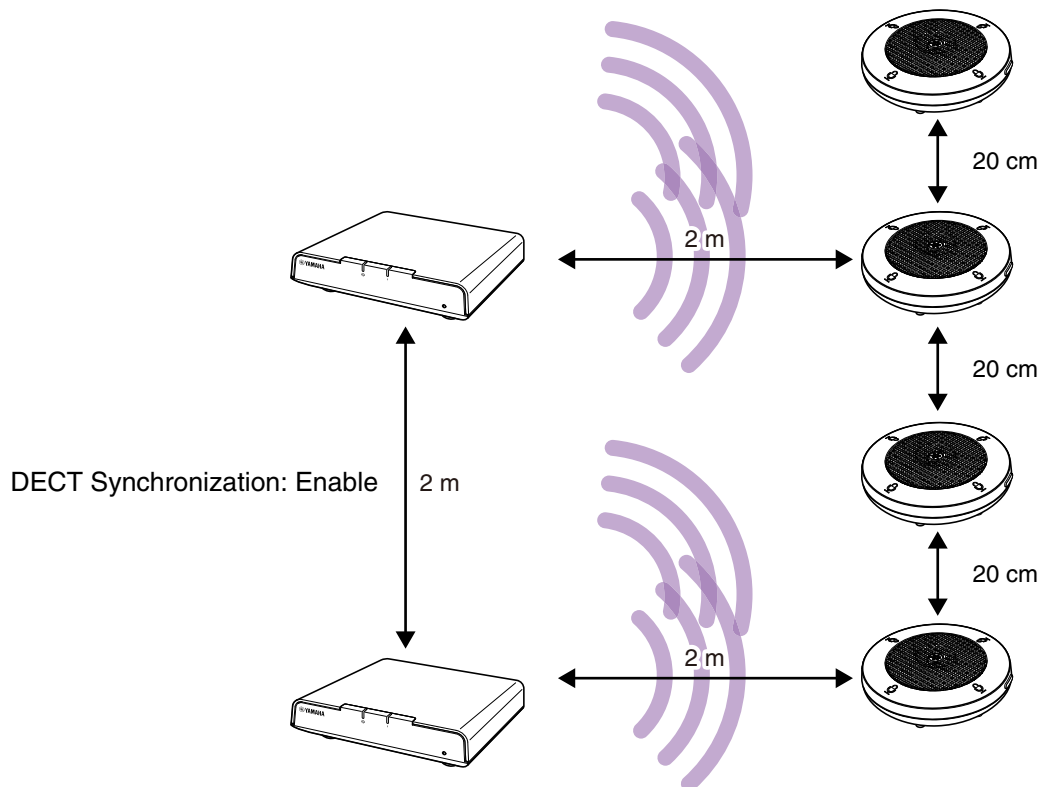
For details, refer to “Using the SITE SURVEY function”.

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.

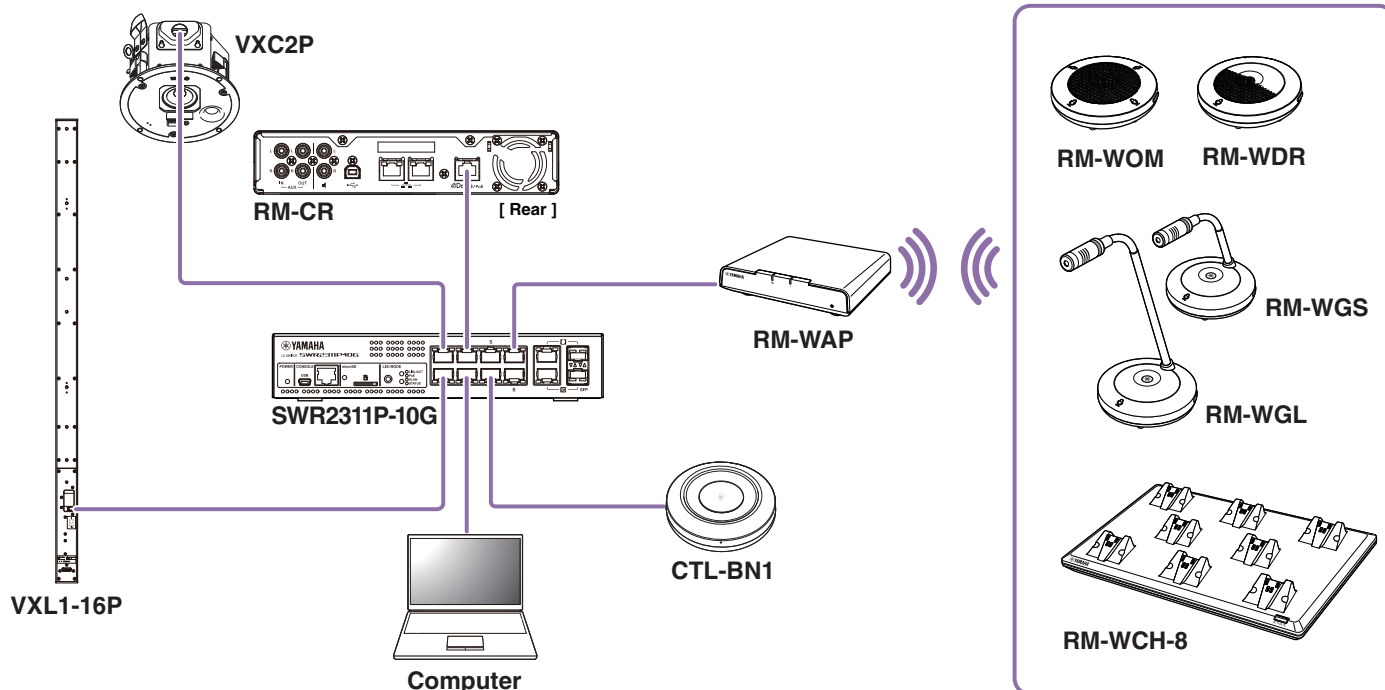
- Computer
- LAN cable

Starting up the Web GUI Device Manager

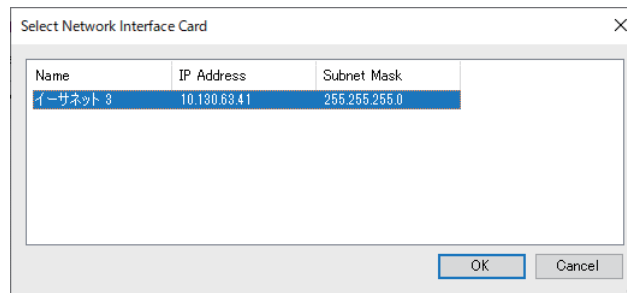
1. Download the application “RM Device Finder” from the Yamaha website (<http://download.yamaha.com/>), and then start it.

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.

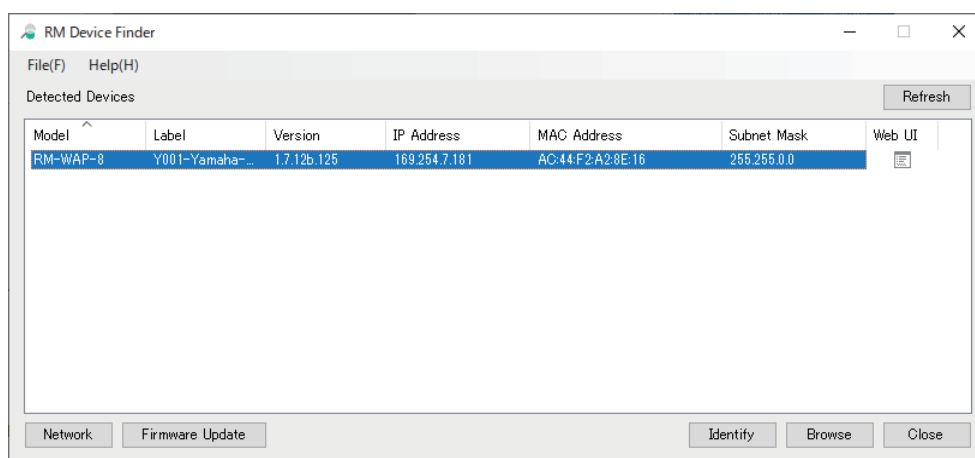


3. Select a network in the [Select Network Interface Card] window, and then click [OK].



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.

RM-WAP Device Manager

Please set a password

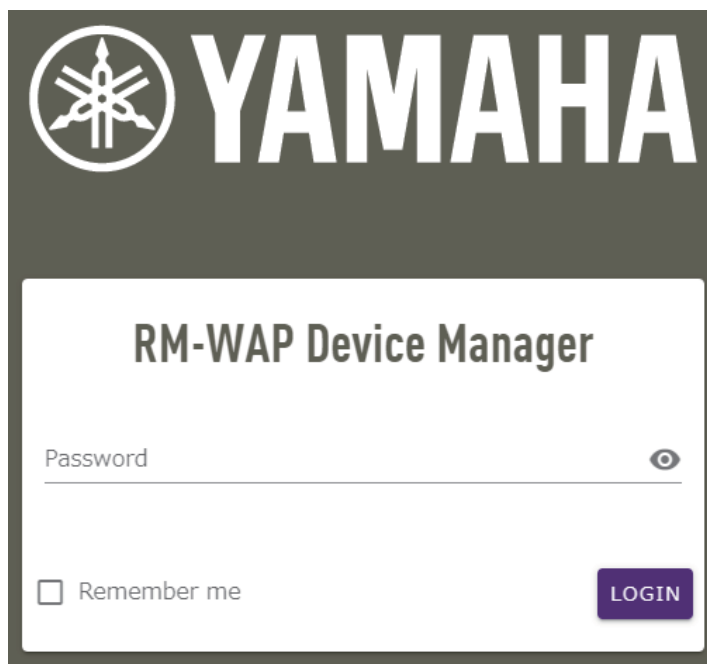
Device Management Account

Device Management User Account Password

Repeat Password

SET PASSWORD

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

The image shows the login interface for the Yamaha RM-WAP Device Manager. At the top, there is a dark grey header with the Yamaha logo (a three-pronged tuning fork inside a circle) on the left and the word "YAMAHA" in large, white, bold, sans-serif capital letters on the right. Below the header is a white rectangular box with a thin grey border. Inside this box, the title "RM-WAP Device Manager" is centered in a bold, dark grey font. Below the title is a password input field with the placeholder text "Password" on the left and a small eye icon on the right. Below the password field is a checkbox with the text "Remember me" to its right. In the bottom right corner of the white box is a purple rectangular button with the word "LOGIN" in white, bold, sans-serif 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

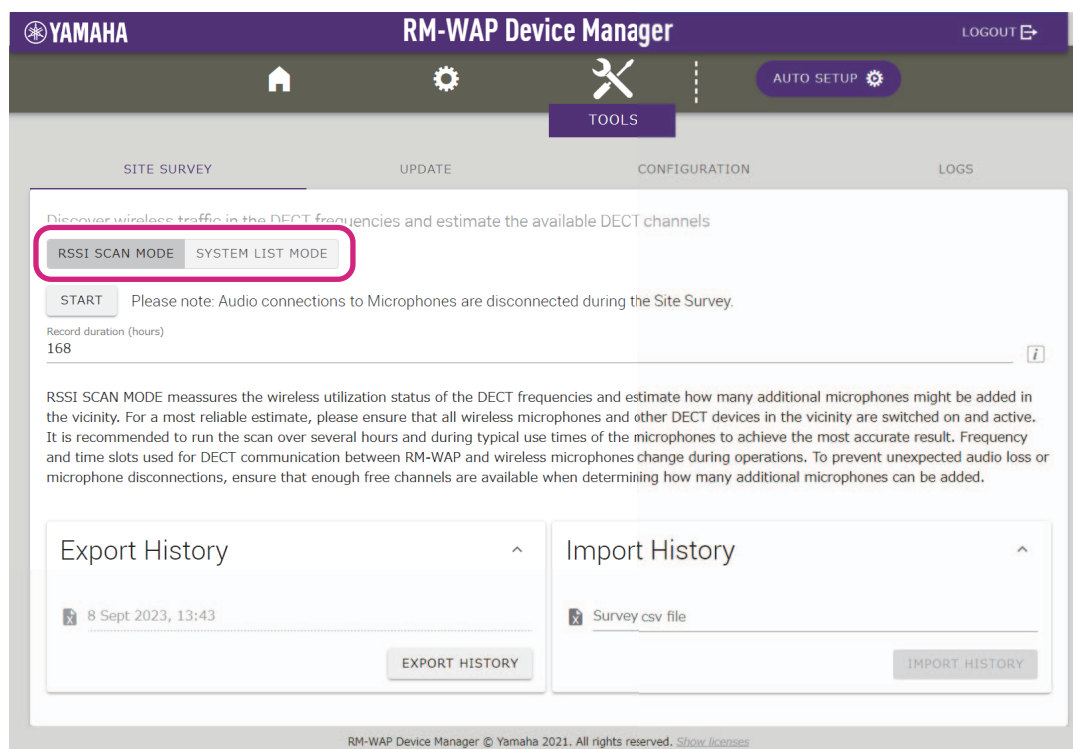
The SITE SURVEY function in RM-WAP Device Manager can be used to check the signal conditions in the installation environment and to estimate how many microphones can be installed. In addition, the SITE SURVEY results can be saved to a file, and the saved file can be imported.

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.

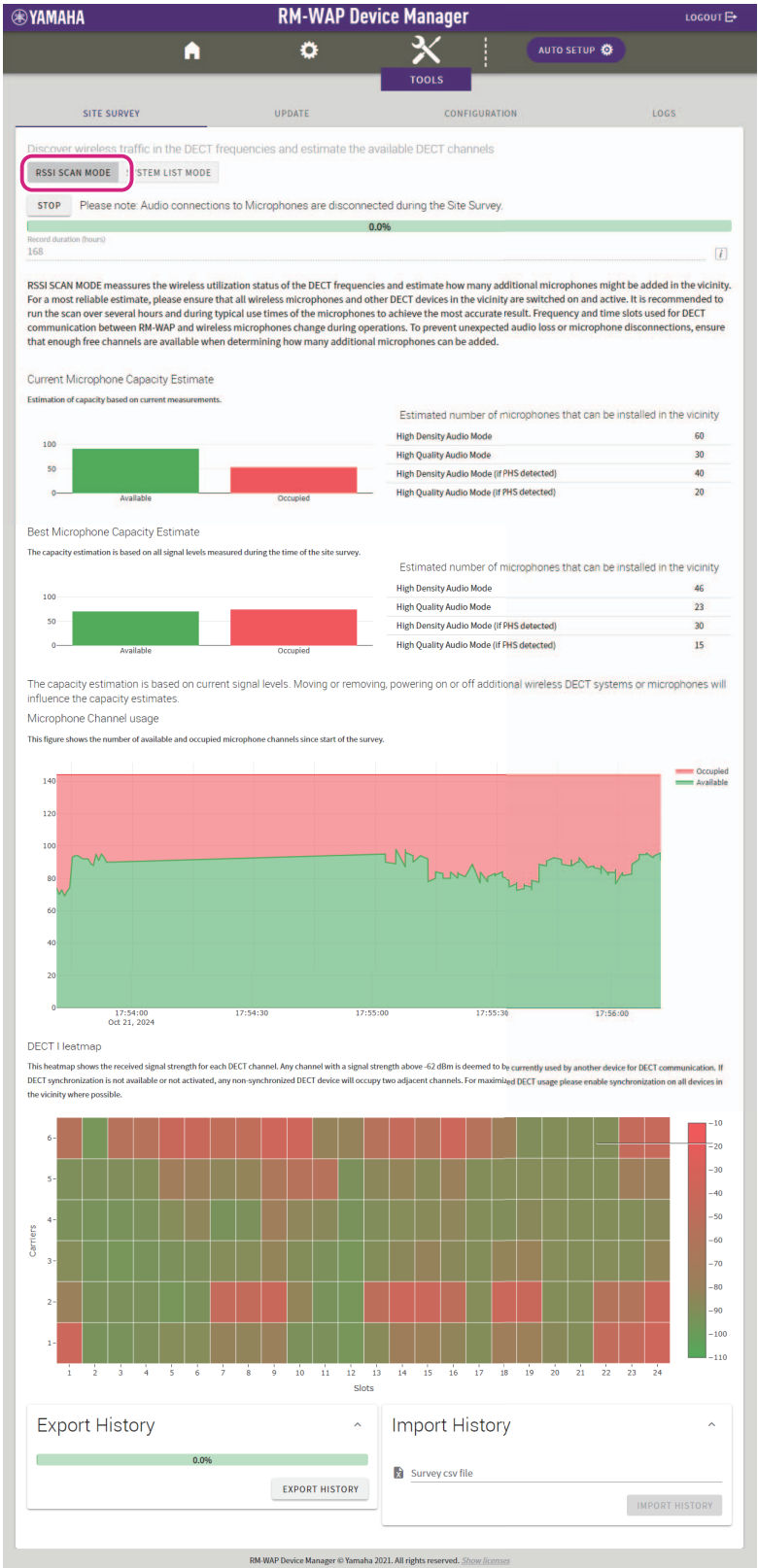
The access point begins measuring the signal strength and channel usage status in the installation environment.

[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.



[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.

YAMAHA

RM-WAP Device Manager

LOGOUT

AUTO SETUP

TOOLS

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

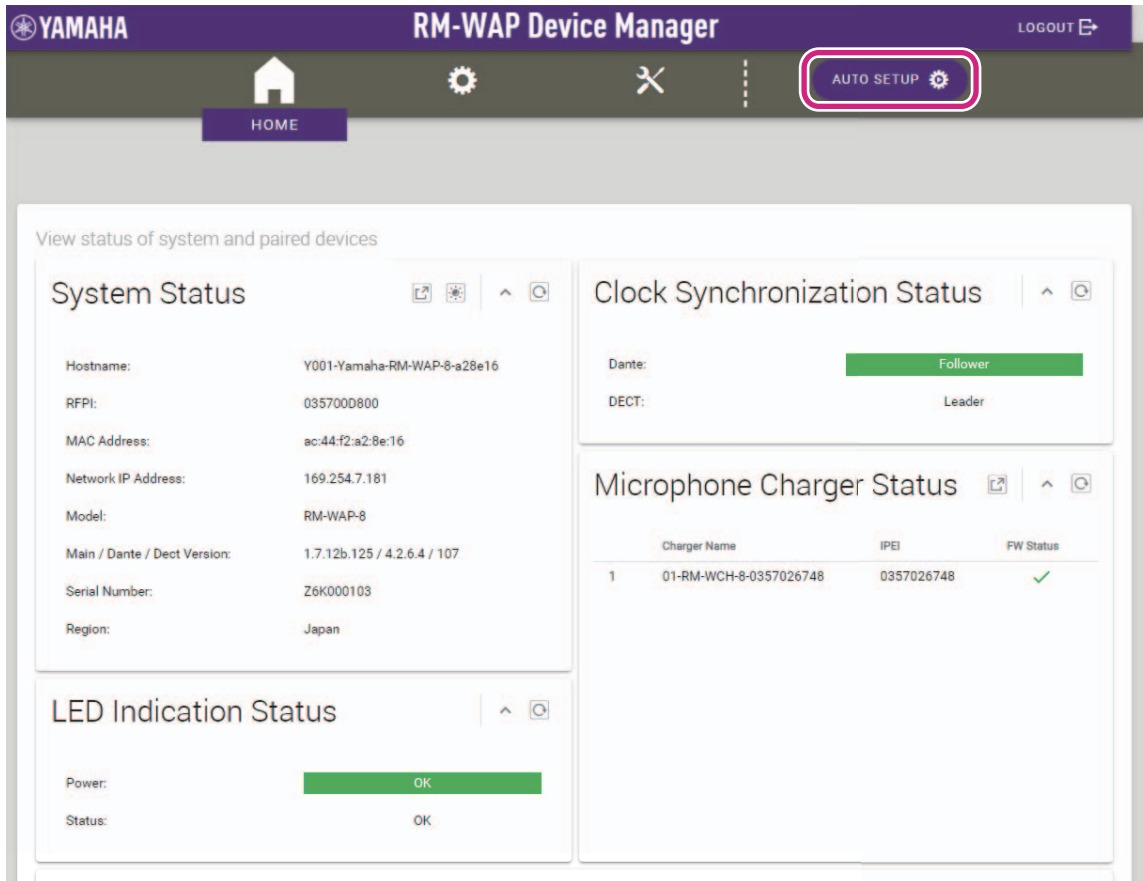
RM-WAP Device Manager © Yamaha 2021. All rights reserved. Show licenses

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.



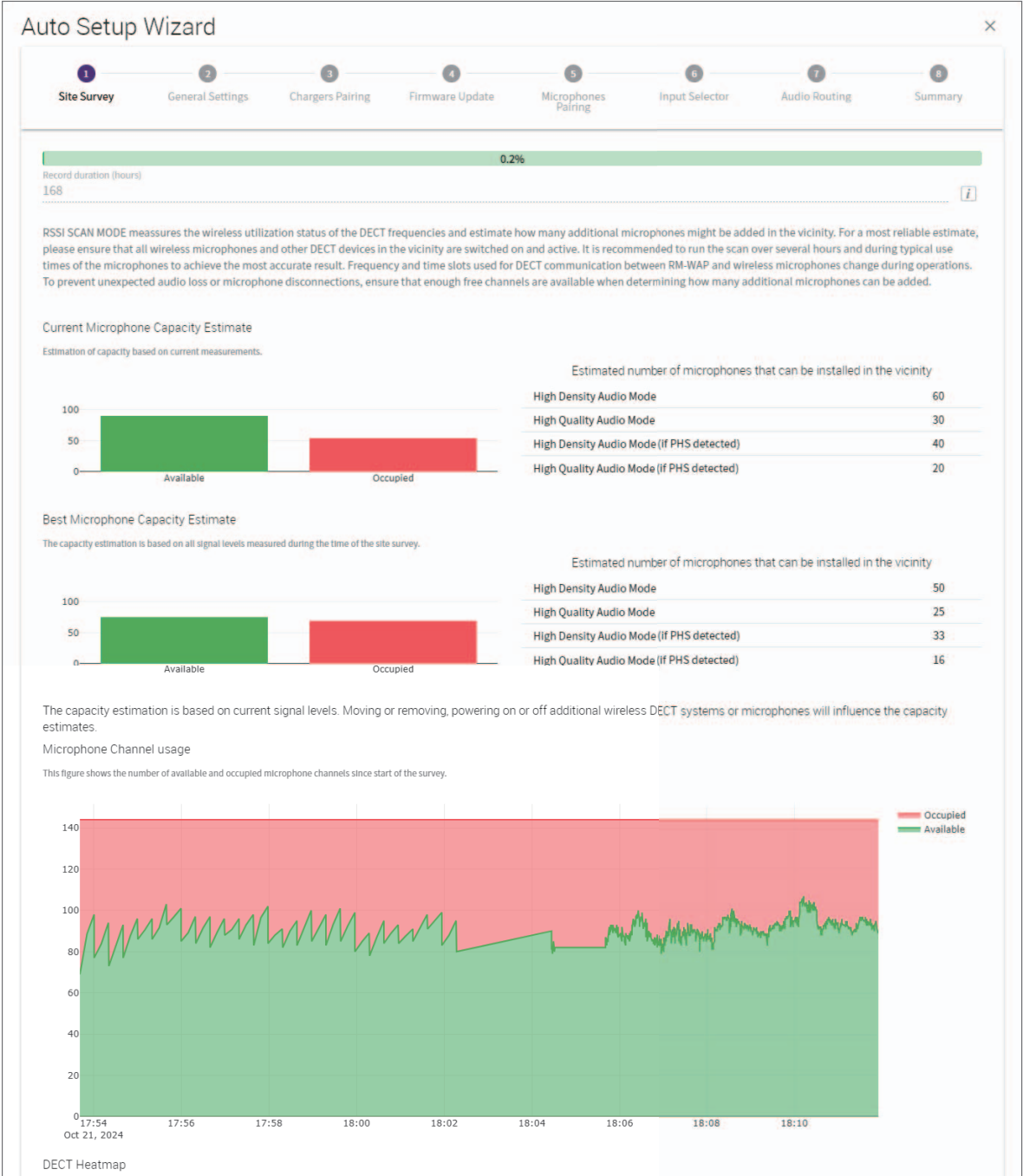
The wizard starts up.

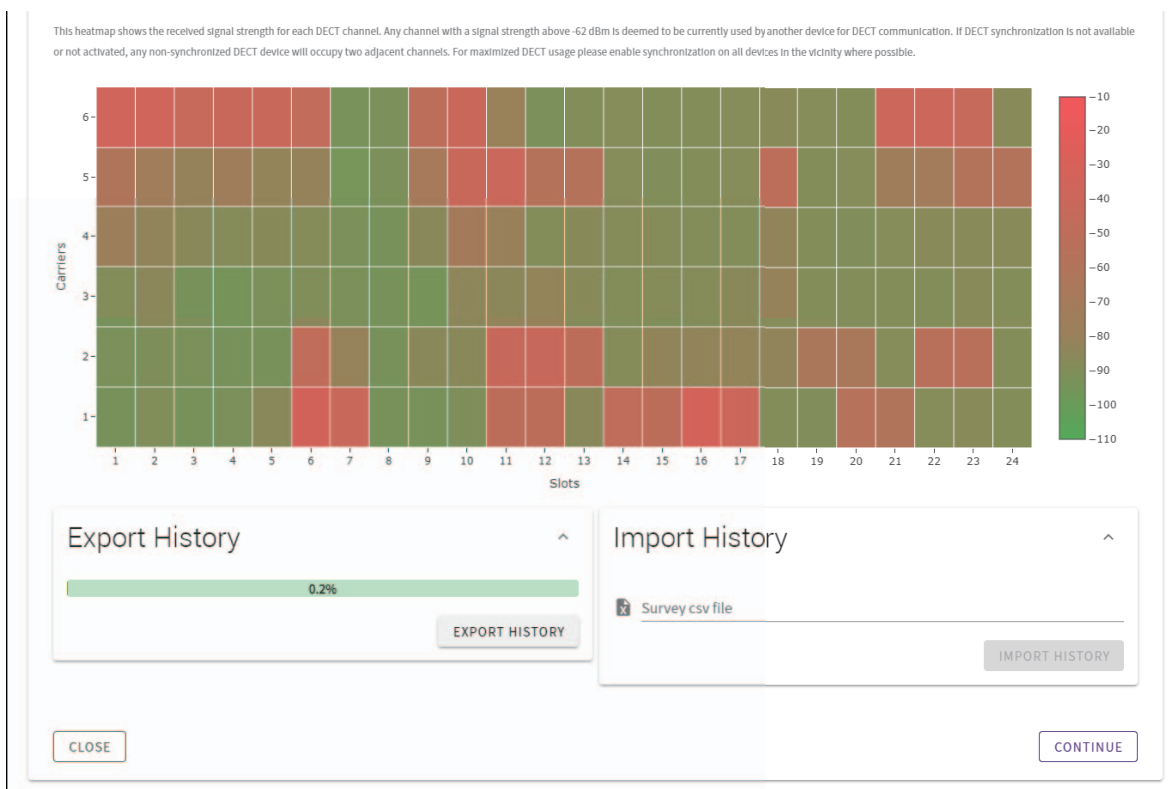
2. Follow the wizard’s instructions to continue the setup.

[1 Site Survey]

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

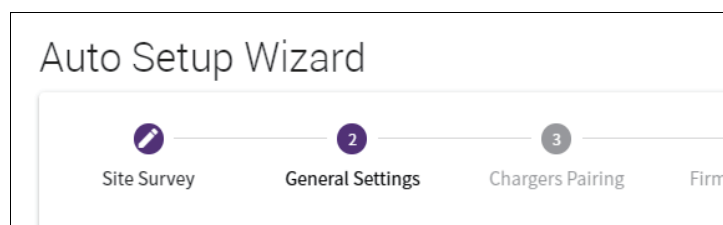
The window shows the number of microphones that can be used in the installation environment. It also shows the signal strength in the installation environment and the channel usage status.





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 . Clicking a window title where the circled number has been replaced with displays that window again.



[② General Settings]

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

The screenshot shows the 'Auto Setup Wizard' interface with the 'General Settings' step selected. The wizard has eight steps: Site Survey, General Settings, Chargers Pairing, Firmware Update, Microphones Pairing, Input Selector, Audio Routing, and Summary. The 'General Settings' section is highlighted with a pink border and contains three sub-sections, each also highlighted with a pink border and a circled number:

- ① AP Name:** Includes a 'Mode' selector (currently 'NAME USING UNIT ID'), a 'Unit ID' field (value: 1), and an 'AP Name' field (value: Yamaha-RM-WAP-16). Each field has an information icon (i).
- ② Locale:** Includes a 'System Language' dropdown (value: English (US)), a 'Time Zone' dropdown (value: +09:00 Tokyo (UTC+09:00)), and a 'lang file' field with an 'IMPORT' button.
- ③ Time Settings:** Includes 'Current Date & Time' (Date: 10/21/2024, Time: 06:12:00 PM), 'Date Format' (MM/dd/yyyy), an 'Enable 24 hour time format' toggle (disabled), an 'NTP Support' toggle (enabled), and four 'Network Time Server' fields (1-4).

At the bottom of the screen, there is a 'BACK' button on the left and a 'CONTINUE' button on the right.

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 select the time zone and language of the information displayed with the information icon.

③ [Time Settings]

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

[3] Chargers Pairing

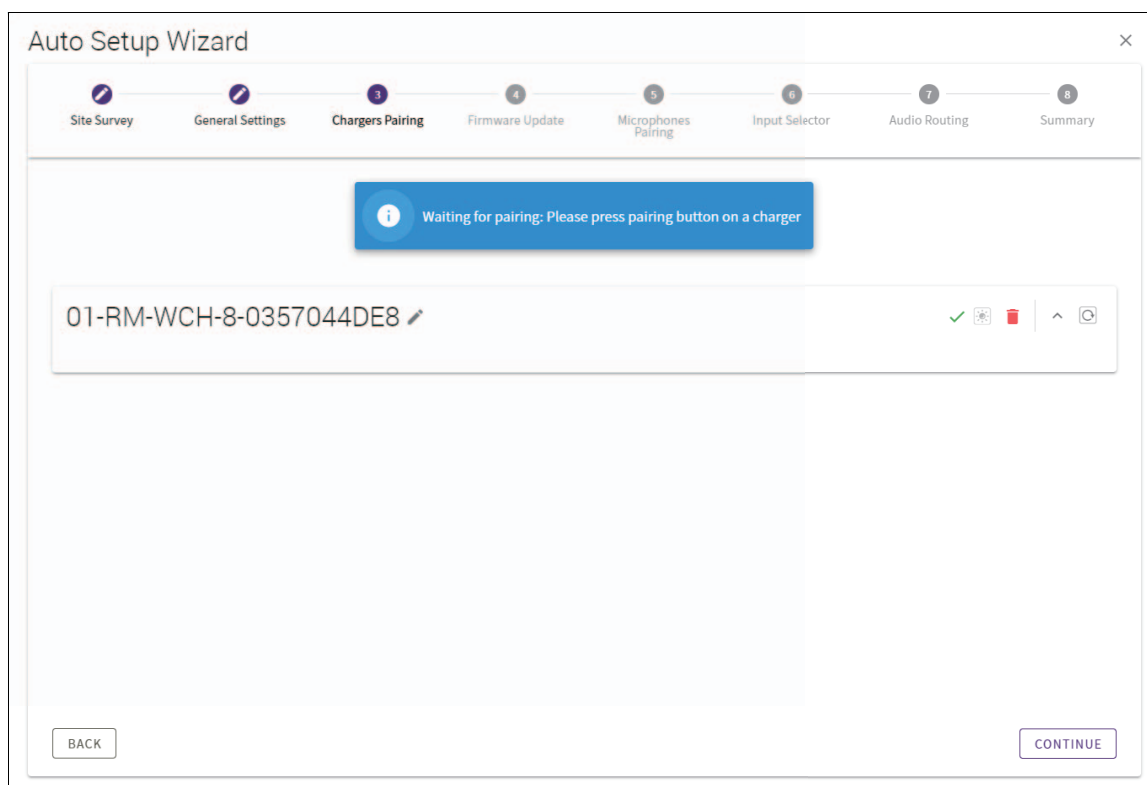
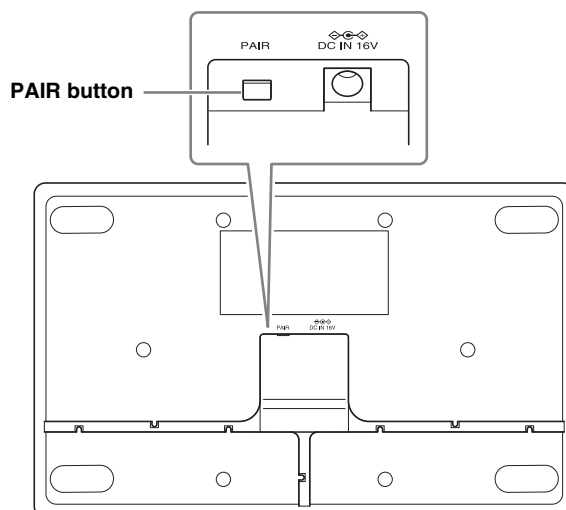
- ① **Insert the charger power plug into an electrical outlet.**

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.




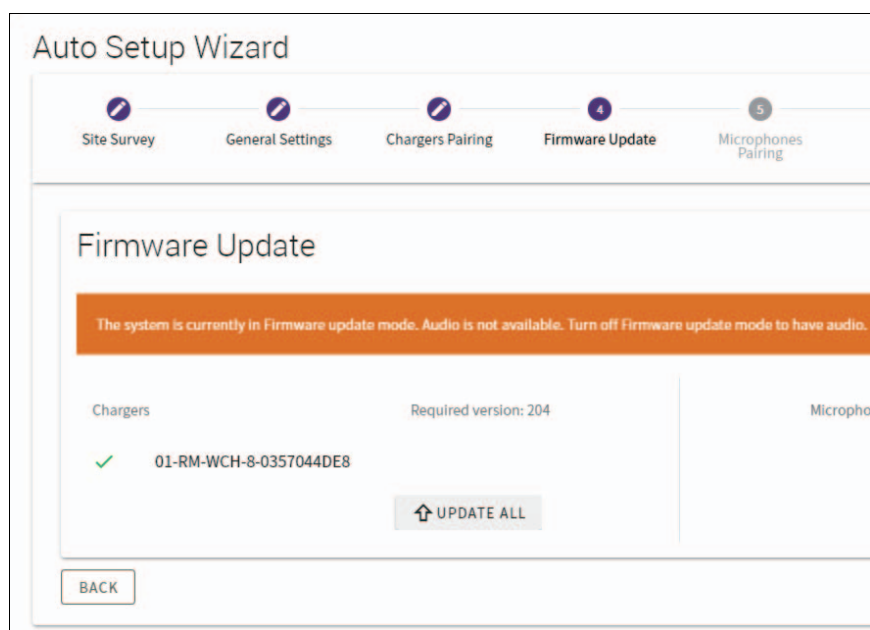
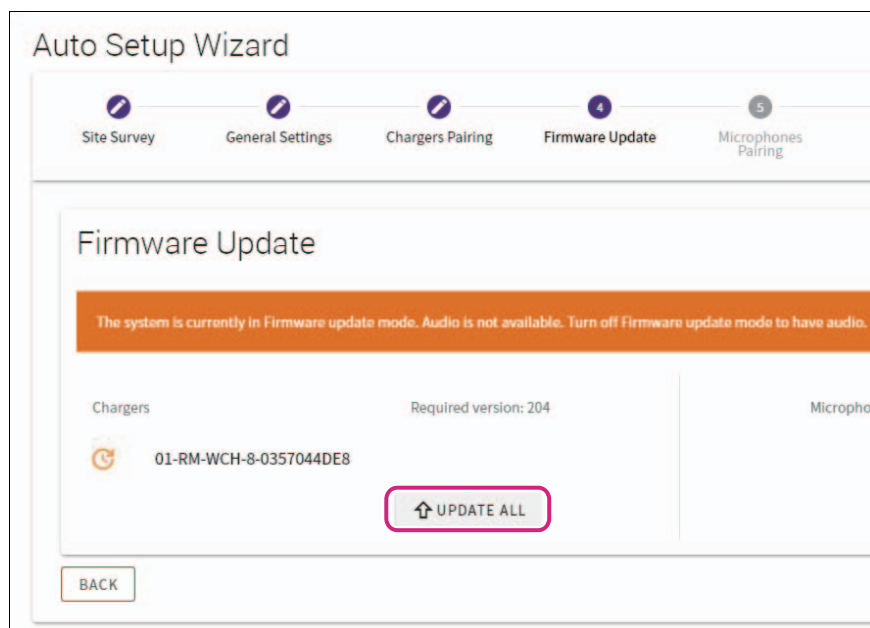
- ③ **Click the [CONTINUE] button.**

[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.

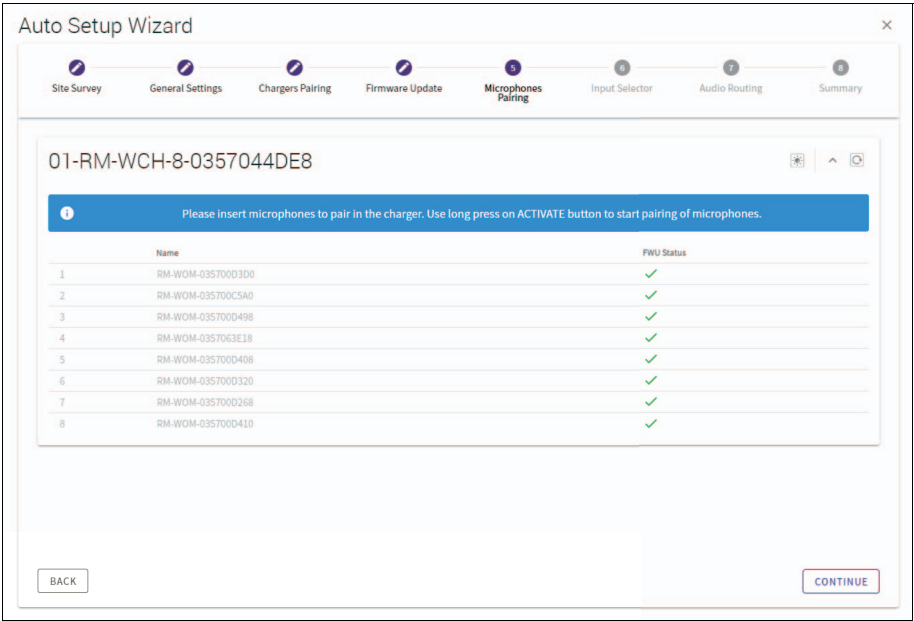
IMPORTANT: Do not remove the microphone(s) from the charger until setup is finished.

NOTE: The microphones are updated one at a time.

- ③ Click the [CONTINUE] button.

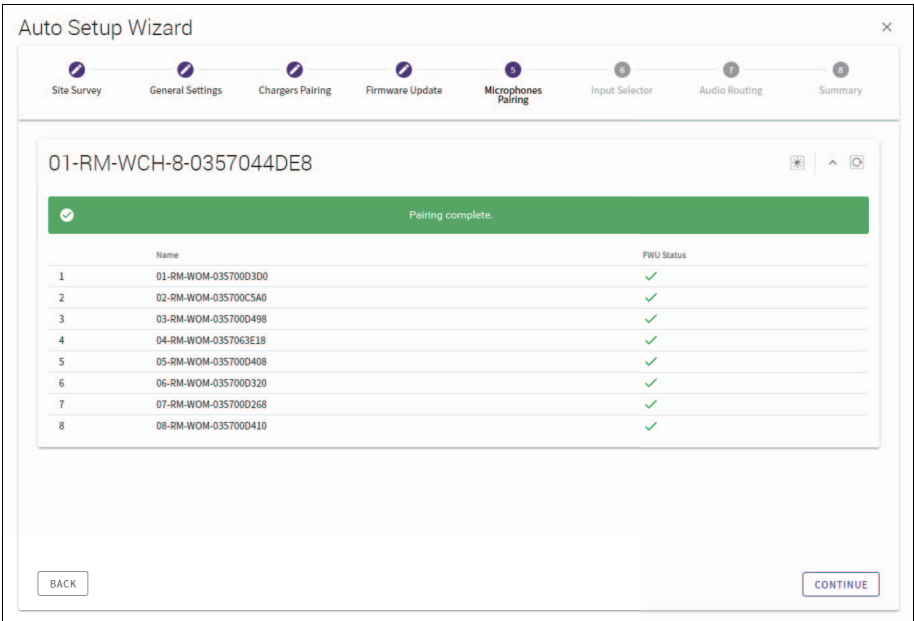
[5 Microphones Pairing]

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.



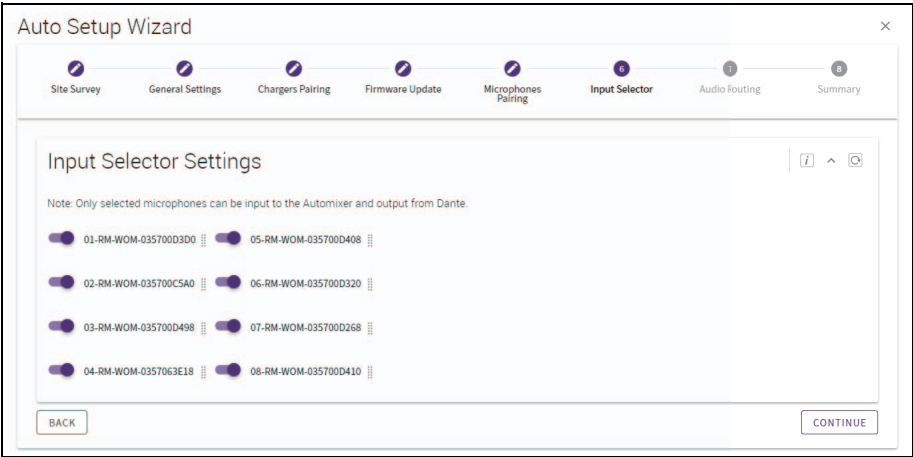
- ② Click the [CONTINUE] button.

[6 Input Selector] * This window is displayed with ADECIA firmware version 3.0 or later.

The paired microphones appear.

Select a microphone to be used, and then click the [CONTINUE] button.

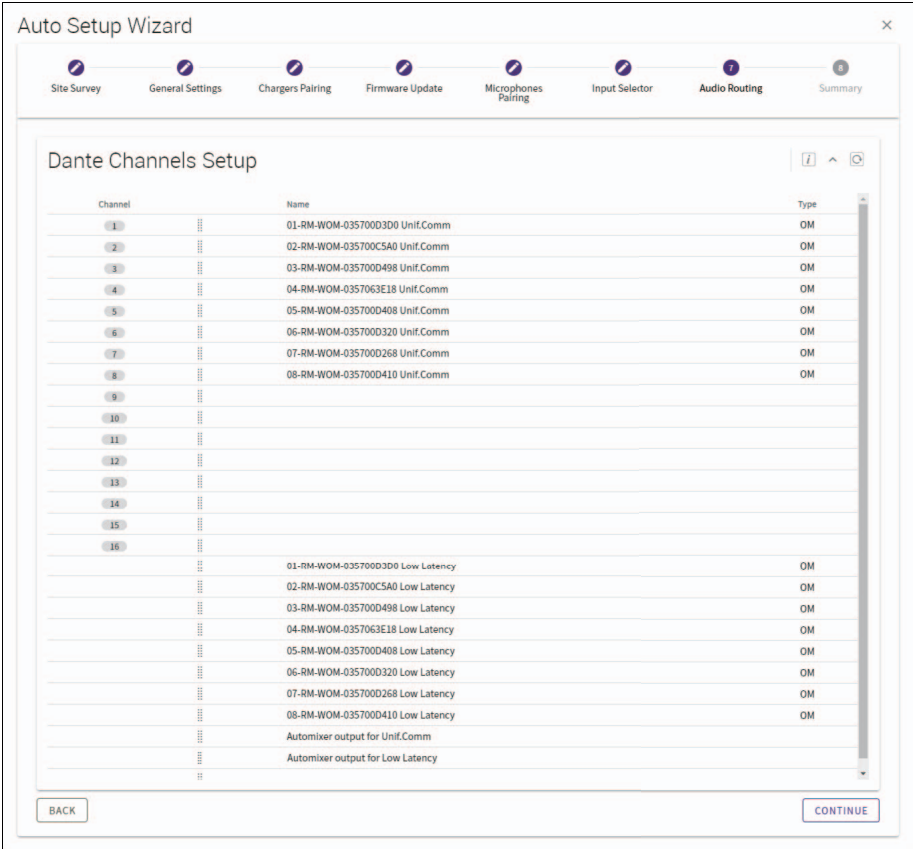
- NOTE: Only selected microphones can be used for the following.
- Input for the Dante Output channel for RM-WAP
 - Automixer input for RM-WAP



[7 Audio Routing]

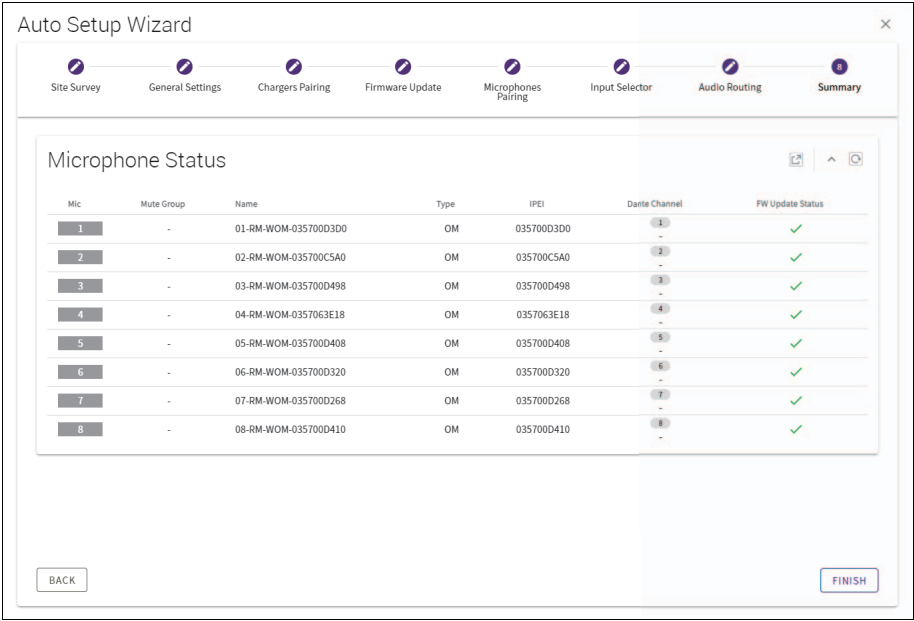
Check the Dante channel to which each microphone is assigned, and then click the [CONTINUE] button.

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



[8 Summary]

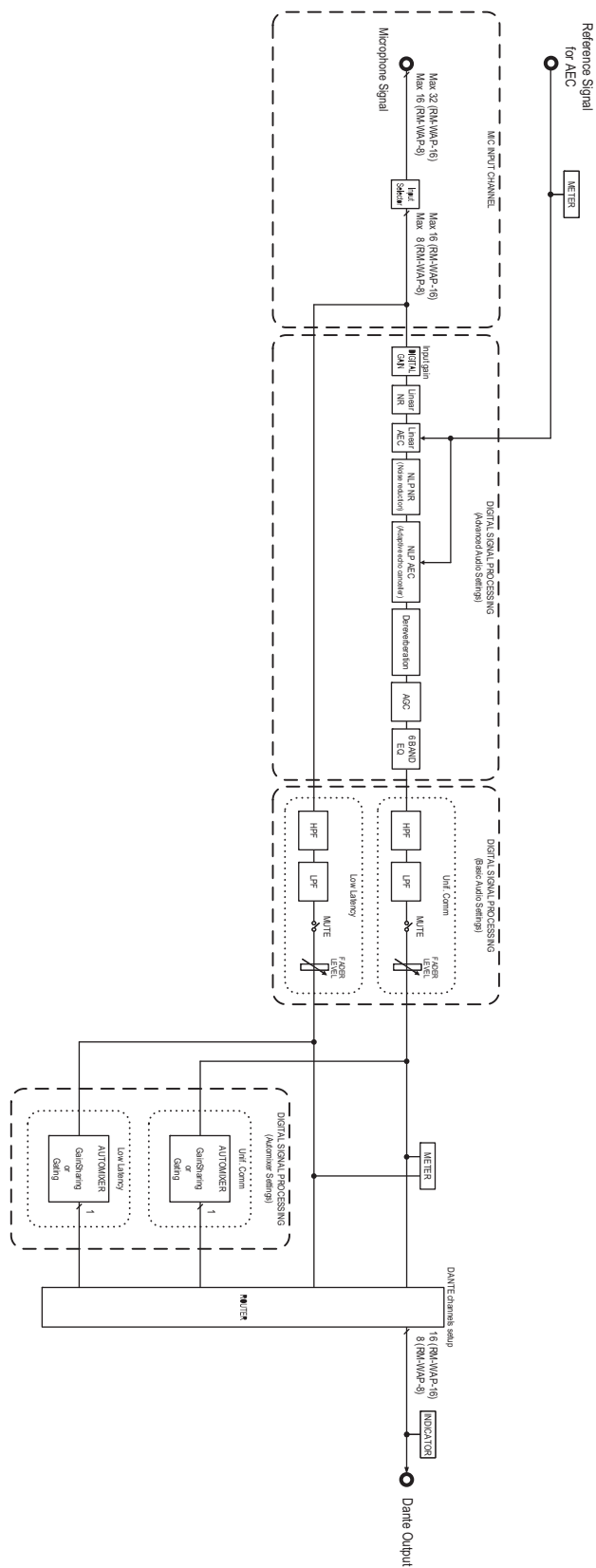
Check the microphone settings, and then click the [FINISH] button.



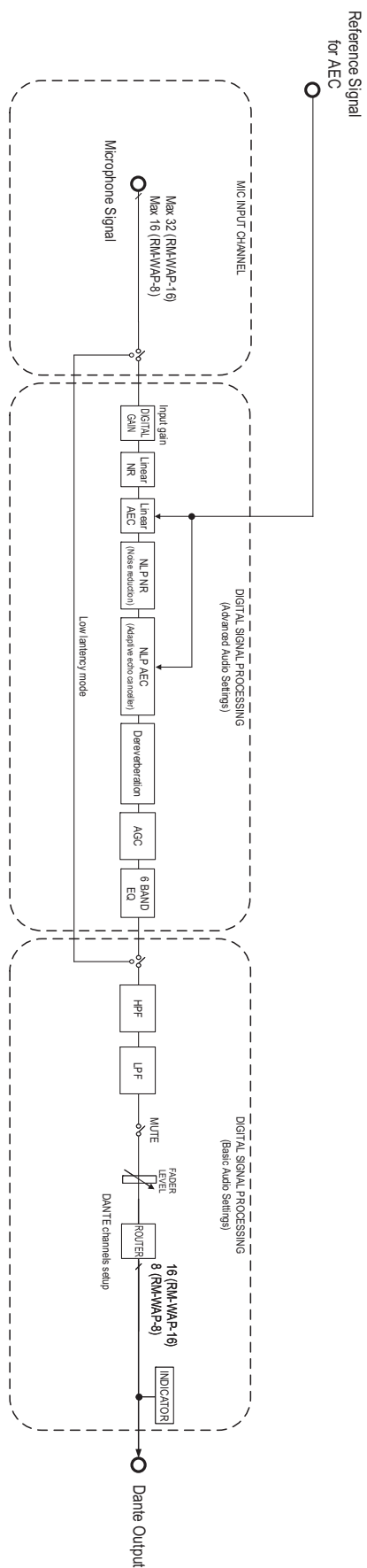
This completes the setup. When a microphone is removed from the charger, a DECT connection between the access point and microphone will be established.

APPENDIX

Block diagram (ADECIA firmware version 3.0 or later)



Block diagram (ADECIA firmware version 2.8)



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] → [DECT] → [DECT Audio Mode] *(ADECIA firmware version 3.0 or later)
- [SETTINGS] → [AUDIO] → [DECT Audio Mode] *(ADECIA firmware version 2.8)
- [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.

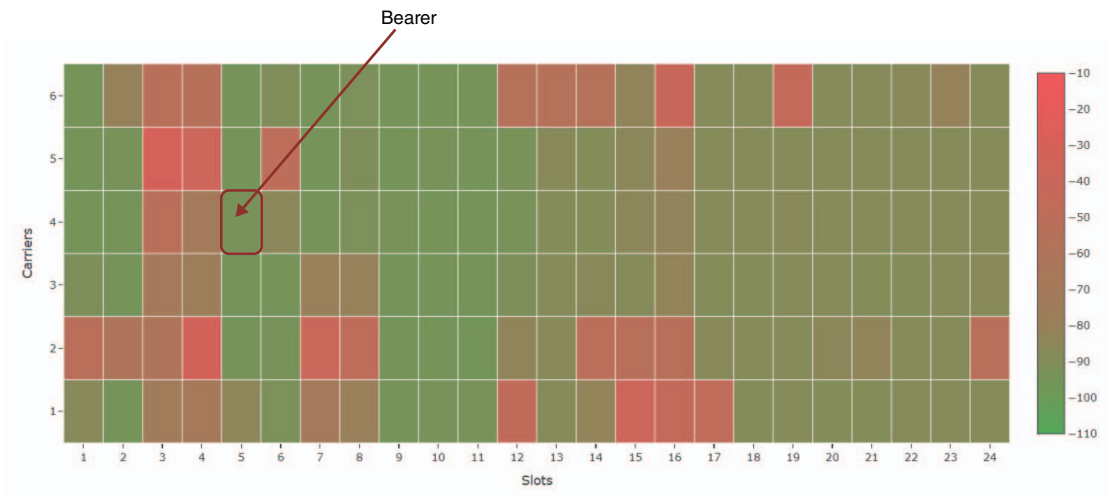
Frames are transmitted continuously as containers for transmitting audio signals.

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.

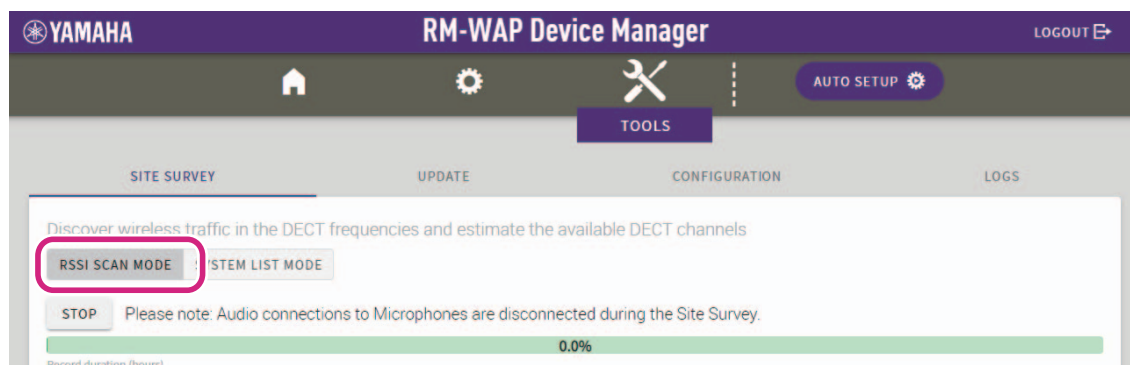
Unit type	Part type	Wireless microphone system
Host Unit	FP (Fixed Part)	Wireless Access Point (WAP)
Client Unit	PP (Portable Part)	Wireless Microphone

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.

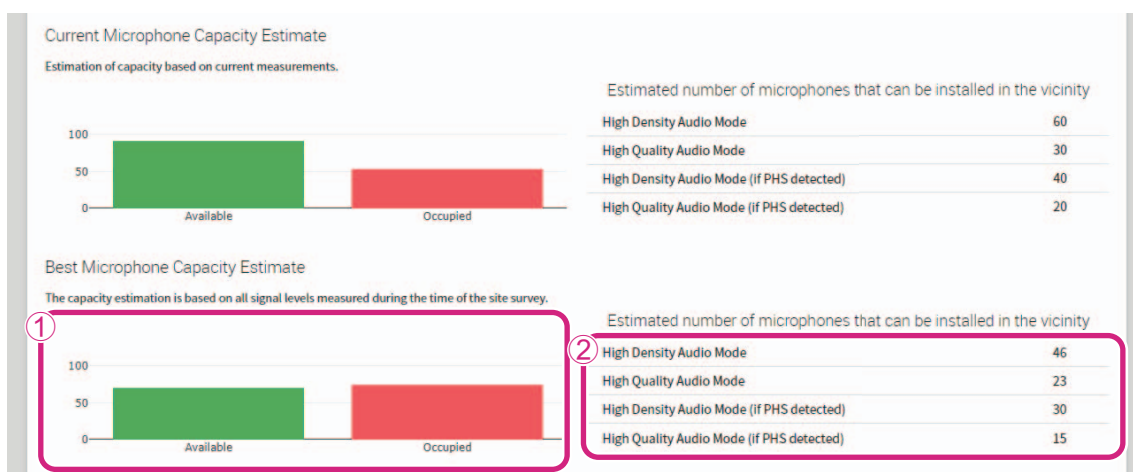
RSSI SCAN MODE

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)

<div></div> Available	This indicates the number of free bearers (channels).
<div></div> 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).

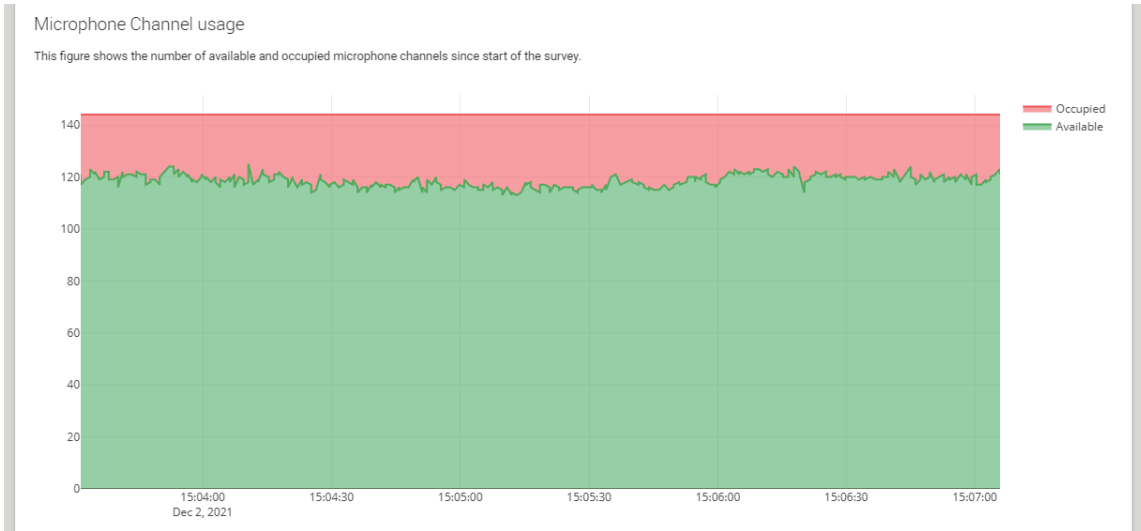
② Estimated number of microphones that can be installed in the vicinity

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.
High Density Audio Mode (if PHS detected)	This mode prioritizes the number of microphones. (if PHS detected)
High Quality Audio Mode (if PHS detected)	This mode prioritizes microphone sound quality. (if PHS detected)

Microphone Channel usage

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

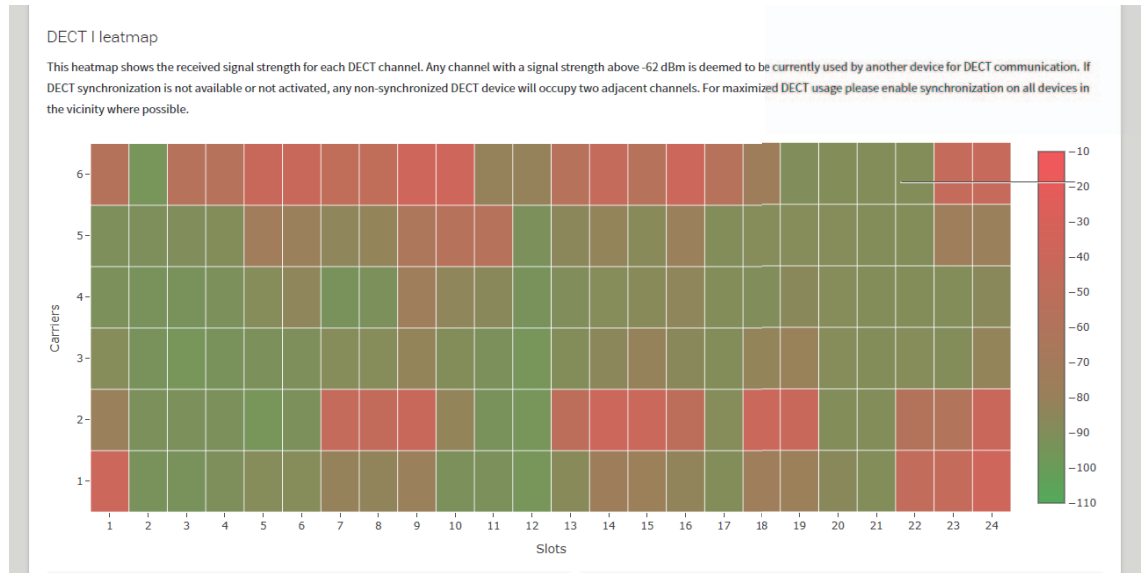


Vertical axis	This indicates the number of bearers (channels).
Horizontal axis	This indicates the time since the start of measurement.
Available	This indicates the number of free bearers (channels).
Occupied	This indicates the number of bearers (channels) in use.


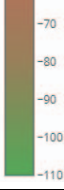
DECT Heatmap

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.

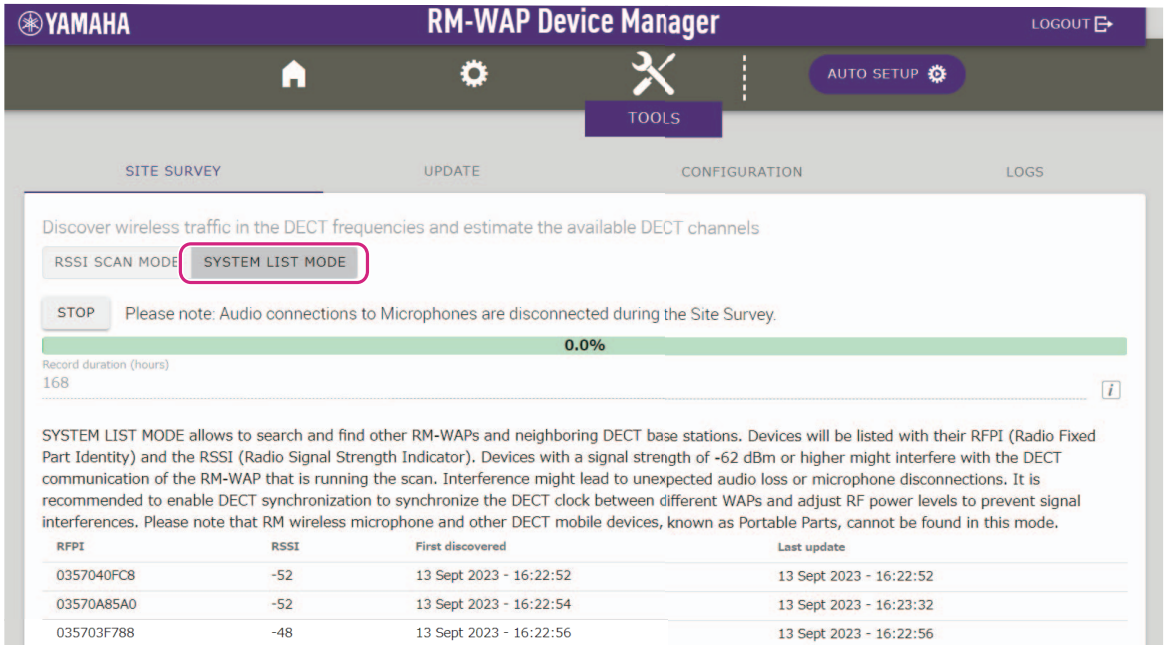


Vertical axis	This indicates the carrier number.
Horizontal axis	This indicates the slot number.

	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]→[DECT]→[DECT Audio Mode] *(ADECIA firmware version 3.0 or later)

[SETTINGS]→[AUDIO]→[DECT Audio Mode] *(ADECIA firmware version 2.8)

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)

<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		<ul style="list-style-type: none"> • Power • Status • Network port
Maximum number of connections to RM-CR	RM-WAP-16	1 / 4 (ADECIA V3.0 or later)
	RM-WAP-8	2 / 8 (ADECIA V3.0 or later)
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		<ul style="list-style-type: none"> • Mounting bracket : 1 • Owner's Manual : 1

Network specifications

Dante/PoE port	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • USA/Canada: 1920.0 MHz – 1930.0 MHz • Europe/Northern Europe/UK/Australia/New Zealand/Hong Kong: 1880.0 MHz – 1900.0 MHz • Saudi Arabia/UAE/South Africa/Singapore: 1880.0 MHz – 1900.0 MHz • Japan: 1893.5 MHz – 1906.1 MHz
Maximum output power (EIRP)	<ul style="list-style-type: none"> • USA/Canada: 20.1 dBm • Europe/Northern Europe/UK/Australia/New Zealand/Hong Kong: 25.9 dBm • Saudi Arabia/UAE/South Africa/Singapore: 23.8 dBm • Japan: 27.0 dBm
Antenna (built-in)	Supports space diversity
Use	<ul style="list-style-type: none"> • 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)

IP Ports and Protocols

Port	TCP/UDP	Protocol	Explanation	Initial Value
68	UDP	DHCP	Dynamic Host Configuration Protocol. For obtaining an IP address.	Open
80	TCP	HTTP, WebSocket	For setting up and controlling equipment. Password can be set.	Open
161	UDP	SNMP	Simple Network Management Protocol. For device monitoring.	Open
20000 20001 20002	TCP		For Diagnostic.	Open
49280	TCP		For device control.	Open
54330	UDP		For device discovery.	Open

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	<ul style="list-style-type: none"> • Mic • Battery
	RM-WGL RM-WGS	<ul style="list-style-type: none"> • Mic • Ring • Battery
Accessories	RM-WOM RM-WDR	<ul style="list-style-type: none"> • RM-WBT (battery) : 1 • Owner's Manual : 1
	RM-WGL RM-WGS	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> USA/Canada: 1920.0 MHz – 1930.0 MHz Europe/Northern Europe/UK/Australia/New Zealand/Hong Kong: 1880.0 MHz – 1900.0 MHz Saudi Arabia/UAE/South Africa/Singapore: 1880.0 MHz – 1900.0 MHz Japan: 1893.5 MHz – 1906.1 MHz
Maximum output power (EIRP)	<ul style="list-style-type: none"> USA/Canada: 20.1 dBm Europe/Northern Europe/UK/Australia/New Zealand/Hong Kong: 25.9 dBm Saudi Arabia/UAE/South Africa/Singapore: 23.8 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 
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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> USA/Canada: 1920.0 MHz – 1930.0 MHz Europe/Northern Europe/UK/Australia/New Zealand/Hong Kong: 1880.0 MHz – 1900.0 MHz Saudi Arabia/UAE/South Africa/Singapore: 1880.0 MHz – 1900.0 MHz Japan: 1893.5 MHz – 1906.1 MHz
Maximum output power (EIRP)	<ul style="list-style-type: none"> USA/Canada: 20.1 dBm Europe/Northern Europe/UK/Australia/New Zealand/Hong Kong: 25.9 dBm Saudi Arabia/UAE/South Africa/Singapore: 23.8 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)