ICOM

Icom Inc.

INSTRUCTION MANUAL

ACCESS POINT
MANAGEMENT TOOL

RS−AP3

These instructions contain important safety and operating instructions for the RS-AP3.

Icom Inc.

INTRODUCTION

Thank you for choosing this Icom product. The RS-AP3 ACCESS POINT MANAGEMENT TOOL is designed and built with Icom's IP network technology. We hope you agree with Icom's philosophy of "technology first." Many hours of research and development went into the design of your RS-AP3.

NOTE:
To start the wireless access point management, you must "Enable" the "Access Point Management Tools." (☞p.1-4)
Set the static IP address to your PC.
If you use the RS-AP3 for the first time, read through operation instructions written in the chapter 1.

System requirements

◇ PC
CPU Clock speed: Dual Core 2 GHz or more (32 bit (x86) or 64 bit (x64) processor)
System memory: 2 GB or more
Hard disk: At least 2 GB of free space.

◇ Operating system
Windows Server 2019
Windows Server 2016
Windows Server 2012 R2
Windows Server 2012
Windows 11
Windows 10
Windows 8.1

• The RS-AP3 cannot be used with Windows RT 8.1.
• The RS-AP3 can be used with both 32 and 64 bit versions of the operating systems listed above.
• GUI environment only.
• These Instructions are based on using Windows 10.
• We recommend that you use a Solid State Drive (SSD) rather than a Hard Disk Drive (HDD) for saving the logs.
• These screen captures in the instructions may slightly differ, depending on the operating system used.

INTRODUCTION

Product information

- Wireless access points of the same model can be managed by one group.
  A total of 64 groups can be programmed.

  The license of the RS-AP3 is as follows.

  Number of access points managed
  - ➥ 3000 access points (maximum)/64 groups (total)
  - ➥ 128 access points (maximum)/1 group

  Number of groups
  - ➥ 64 groups (total)
- Start the RS-AP3 to manage the access points in the groups.
  Until the management is completed, changes cannot be made on an access point's setting screen.
- Multiple access points can be managed individually or collectively.
- From the access points scanning results, power level and channels according to the system environment can automatically be set to the access points.
- Load balance can be managed based on information received periodically from the access points, according to the wireless LAN devices.
- Radio wave environment status can be displayed on a graph according into the data received from the access points.
- Management is automatically enabled when an access point to be managed is detected.
- The Site Survey function and MAC Authentication (RADIUS) server are inside the RS-AP3.
- The SSID or encryption settings for access points programmed to all groups can be displayed on a list.
- If an access point with a previous firmware version is detected, it can automatically be updated.
- Access point information can periodically be sent, or messages can be sent when an unauthorized access or a notification fault is detected.
  - ➥ You can set it not to send messages when none of an unauthorized access or a notification fault is detected.
- Synchronizing the setting data with another PC with the RS-AP3 installed can avoid unmanageability caused by communication fault.
  - ➥ When using the mirroring function, 2 different RS-AP3 (USB flash drives) on the same license are necessary.
- The RS-AP3 consists of the Windows service (shown below) that resides for managing the operating screen and wireless access points.

Operating screen		Service
For editing settings and displaying logs.	As the Operating screen and Windows service are different programs, information is exchanged by using setting files. • After editing the setting contents on the Operating screen, the setting file needs to be saved and applied to the Windows service side.	Managing wireless access points, according to the setting file contents. • Operation starts when Windows starts

INTRODUCTION

Installation note

- When the RS-AP3 USB flash drive is inserted into the USB port, "REMOVABLE drive" and "Setup.exe" appear.
  The flash drive must be inserted into the PC when saving the setting files or synchronizing with the mirroring function.
- The RS-AP3 resides as a Windows service. Therefore, you can manage the access points, using saved setting files.
  After setting the access points to manage on the operation screen, remove the flash drive.
  ➡ Modifications are applied to the service when the contents modified with the software are overwritten.
  ➡ If you load a setting file that is saved in advance, save it again with the RS-AP3.
- To synchronize the setting data between the RS-AP3 and an access point, overwrite the settings entered on the operation screen, and then send them to the access point.
- When the access point management is completed (☞p.1-21), "Access Point Management Tools" automatically return to "Disable."
  To manage the access point again, you must "Enable" the "Access Point Management Tools."
  (☞p.1-4)
- When using the Wireless Bridging communication function, you must activate the function in order for the access points to communicate, before enabling the "Access Point Management Tools."
- As of April 2022, the only wireless access point that can be used with the RS-AP3 is Icom's AP-90M and AP-95M.

When managing a wireless access point with a router function:
• The WAN router settings of the wireless access point cannot be changed.

When managing a wireless access point with a router function from the WAN side:
• Set the connection type to "Static IP" and enter a static IP address for the WAN side IP address, before starting the system management.
  ➡ When setting the connection type to "DHCP client," set the Static DHCP server function on the DHCP server side so that the same IP address is always given.
  ➡ When setting the connection type to "PPPoE," you cannot manage the system from the WAN side of a wireless access point.
• When accessing the WAN side of the wireless access point using the RS-AP3, set the [Open management ports of RS-AP3] item to "Enable," or set an appropriate IP filter so that the RS-AP3 can access from the WAN side.
  ➡ When you set the [Open management ports of RS-AP3] item to "Enable," an IP filter is automatically set so that the RS-AP3 can access the system from the WAN side.

Access Point Management Tools

RS-AP3 :	○ Disable ◉ Enable
Open management ports of RS-AP3 :	◉ Disable ○ Enable

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1 USING THE RS-AP3

1. Before using the RS-AP3

Before using the RS-AP3 for the first time, follow these instructions.

1. SETTING THE WIRELESS ACCESS POINT	**1. Setting the wireless access point IP address** (☞p.1-3) Set the IP address and network settings on the "IP Address" screen to manage with the RS-AP3.
	2. Setting the wireless access point to RS-AP3 mode (☞p.1-4) Before using the RS-AP3, you must "Enable" the "Access Point Management Tools" on the setting screen.

2. STARTING THE RS-AP3	**1. Starting the RS-AP3** (☞p.1-5)
	2. Adding groups (☞p.1-7)
	3. Adding wireless access points (☞p.1-8)
	4. Setting wireless access point IP address (☞p.1-10) Set the IP address set for the access point.
	5. Saving the setting data (☞p.1-11) Save the access point setting data as a setting file (extension: rsap3) on the PC. • After editing the contents, you must save the setting file and apply it to the Windows service.
	6. Starting the management (☞p.1-13)
	7. Importing wireless access point settings (☞p.1-14) To reuse the contents set to the access points, load the setting data from access point.
	8. Changing the wireless access point settings (☞p.1-16) If needed, click [Individual Configurations] and [Common Configuration] to change the access point setting contents.
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	12. Closing the RS-AP3 (☞p.1-23)

2. Setting the wireless access point

1. Setting the wireless access point IP address

Set the IP address and network settings for the access point on the "IP Address" screen.
• Make sure the IP address is not the same as the other network's address.
• Refer to the access point's instruction manual for details on accessing the setting screen.
• The instruction manual is described based on the AP-90M.

1   Edit the [IP Address] settings on the "IP Address" screen, and then click [Apply].
   • If you want to change the IP address's "network part (Example: 192.168.0)," also change the IP address on the PC.

VLAN

Management VLAN ID: 0

IP Address

IP Address:	192.168.0.1
Subnet Mask:	255.255.255.0
Default Gateway:	
Primary DNS Server:	
Secondary DNS Server:	

❶ Edit

Apply   ❷ Click

2   Click [Reboot].
   • Follow the instructions to restart the AP-90M.

IP Address

Reboot   reboot is required to apply all the new settings.   Click

Host Name

3   After restarting, click [Back].
   The "Login to AP-90M" window is displayed to enter the user ID and password.

2. Setting the wireless access point (Continued)

2. Setting the wireless access point to the RS-AP3 mode

Before using the RS-AP3, you must set the "Access Point Management Tools" to "Enable."

1 Click "Management" and then "Management Tools."
The "Management Tools" screen is displayed.

2 "Enable" the [Access Point Management Tools].

Access Point Management Tools

RS-AP3:   ○ Disable ⦿ Enable   ────── Select

USB

3 Click [Apply].

Telnet Port:	23
SSH:	⦿ Disable ○ Enable
SSH Version:	Automatic ∨
SSH Authentication Method:	Automatic ∨
SSH Port:	22

Apply   ────── Click

When managing a wireless access point with a router function:
• The WAN router settings of the wireless access point cannot be changed.

When managing a wireless access point with a router function from the WAN side:
• Set the connection type to "Static IP" and enter a static IP address for the WAN side IP address, before starting the system management.
  ➡ When setting the connection type to "DHCP client," set the Static DHCP server function on the DHCP server side so that the same IP address is always given.
  ➡ When setting the connection type to "PPPoE," you cannot manage the system from the WAN side of a wireless access point.
• When accessing the WAN side of the wireless access point using the RS-AP3, set the [Open management ports of RS-AP3] item to "Enable," or set an appropriate IP filter so that the RS-AP3 can access from the WAN side.
  ➡ When you set the [Open management ports of RS-AP3] item to "Enable," an IP filter is automatically set so that the RS-AP3 can access the system from the WAN side.

Access Point Management Tools

RS-AP3 :   ○ Disable ⦿ Enable
Open management ports of RS-AP3 :   ⦿ Disable ○ Enable
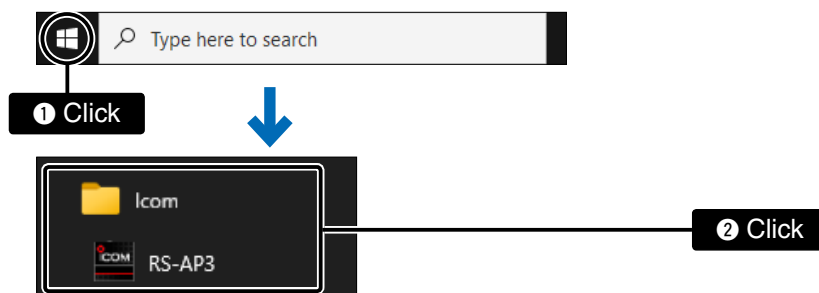
1 USING THE RS-AP3

3. Starting the RS-AP3

> **NOTE:**
> • After the installation has completed, the RS-AP3 USB flash drive must also be inserted into the PC when you first run the RS-AP3 software.
> • After running the software for the first time, the flash drive does not have to be inserted.
>   When a USB flash drive needs to be inserted, such as in the following operation, insert the same flash drive that you used when you first ran the software.
>   ➡ Saving or opening a setting file.
>   ➡ Synchronizing using the mirroring function. (☞p.6-10)

1. Starting the RS-AP3

1   Click the RS-AP3 icon in the Start menu.
     You can also start the software by simply double-clicking the RS-AP3 icon on your desktop.
     • These Instructions are based on using Microsoft Windows 10.

2   If the "User Account Control" window appears, click [Yes] to continue.

3. Starting the RS-AP3 (Continued)

1. Starting the RS-AP3 (Continued)

**3**   Select the country code from the drop-down list.
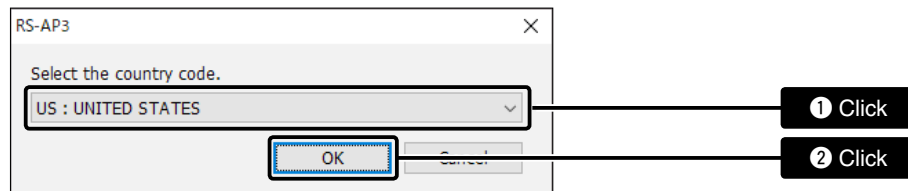
❶ Click

❷ Click

4   Enter a desired User ID, Password and Password (Confirm) of up to 31 characters and symbols, and then click [OK].
• Use numbers, characters and letters (both lower and upper case).
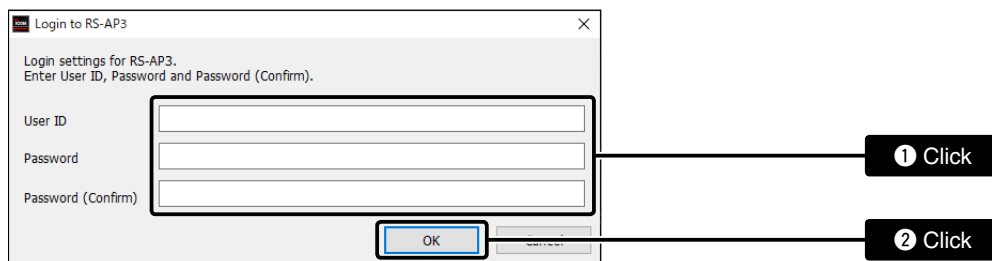
❶ Click

❷ Click

NOTE:
The next time you start the RS-AP3, you will need to enter the User ID and the password that you entered.
• Without the User ID and Password, you cannot start the RS-AP3.
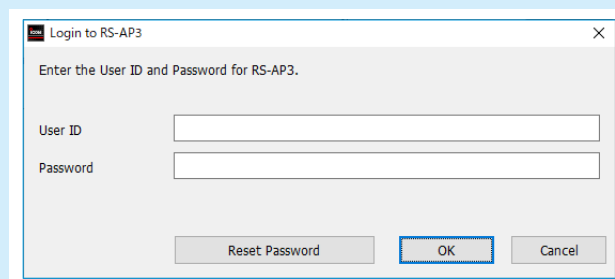
If you click [Reset Password], the User ID and Password are cleared, and will have to be reentered.
• To open the setting file saved with a different User ID or Password (☞p.1-11), the User ID and Password entry window appears. (☞p.2-3, p.3-2)
 To open the setting files saved with a different User ID and Password, enter the ones that you entered when you saved them.

3. Starting the RS-AP3 (Continued)

2. Adding wireless access point groups

1 Select the access point device to assign to the new group to, and then click [OK].

❶ Click

❷ Click
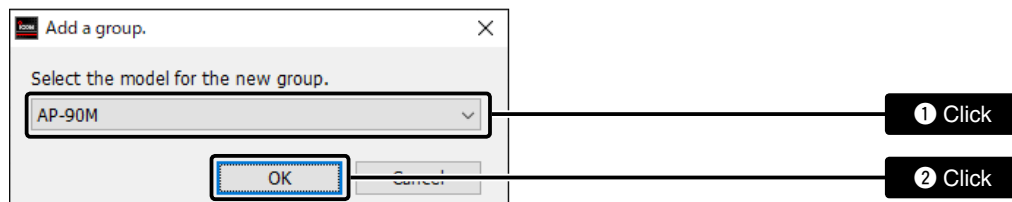
2 Select the assigned group.
Enter a "Title" (up to 32 characters), "Background Bitmap," for example.
• Only the same access points can be managed in a group.
• To set the common configurations to a different access point, you need to separate into different groups to manage.

❶ Click

❷ Set

When setting the Background Bitmap
First, save the picture file (24 bitmap format) in the RS-AP3 installed folder. (Icom > RS-AP3 > BG) (☞p.6-14)
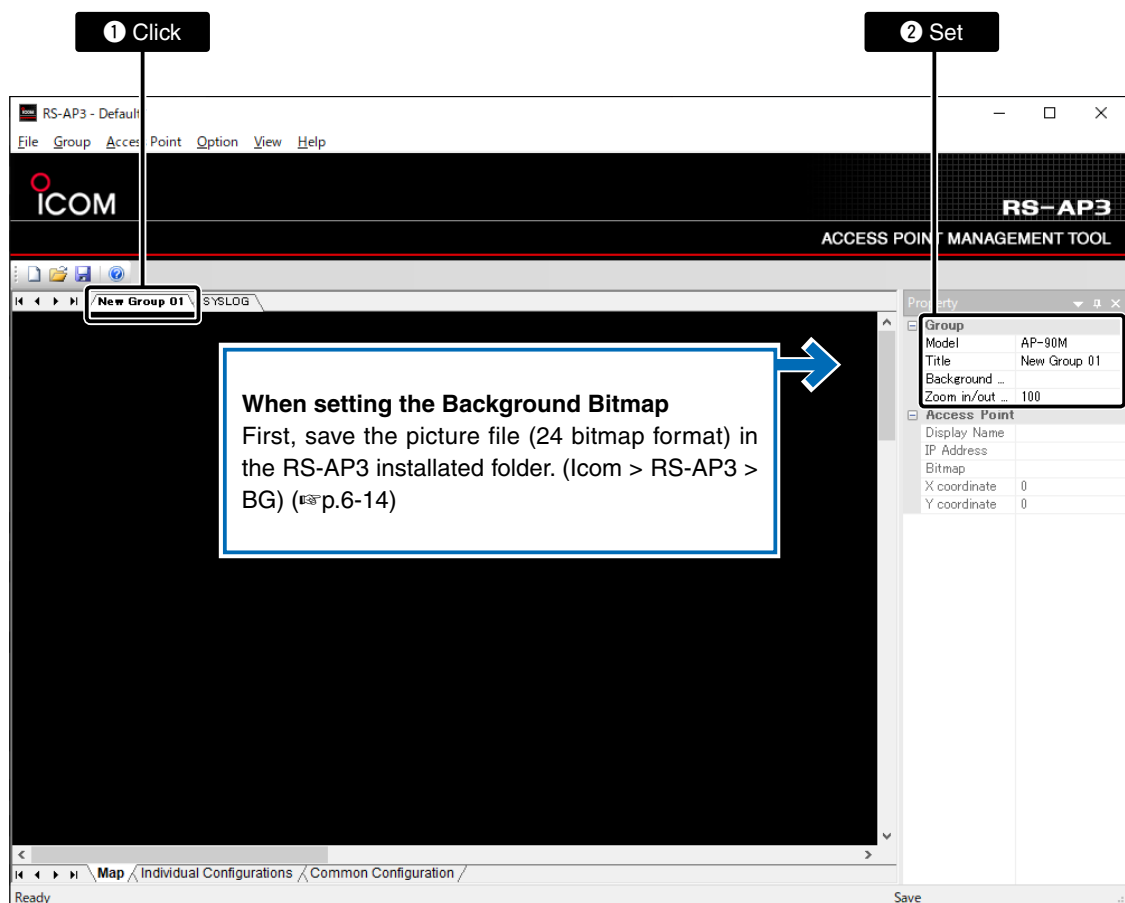
3. Starting the RS-AP3 (Continued)

3. Adding wireless access points

Click "Access Point," then "Add" to add an access point to a group.
• You can also add an access point from the menu that is displayed by right-clicking on the map screen.
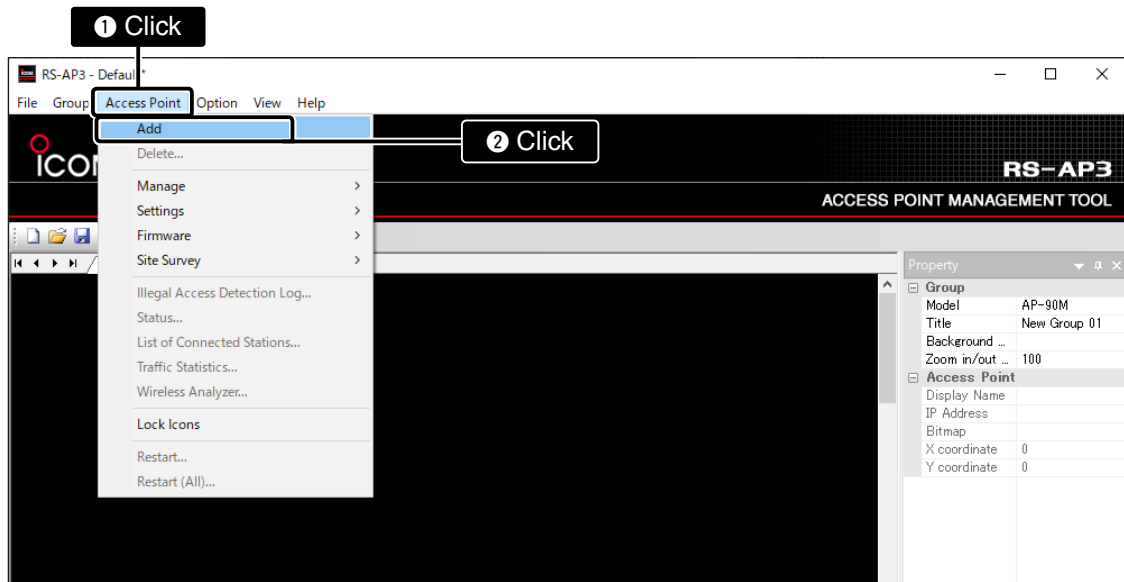
Locking the wireless access point icons
To lock the access point icons, select the access point on the map screen and click "Access point," and then click "Lock Icons."
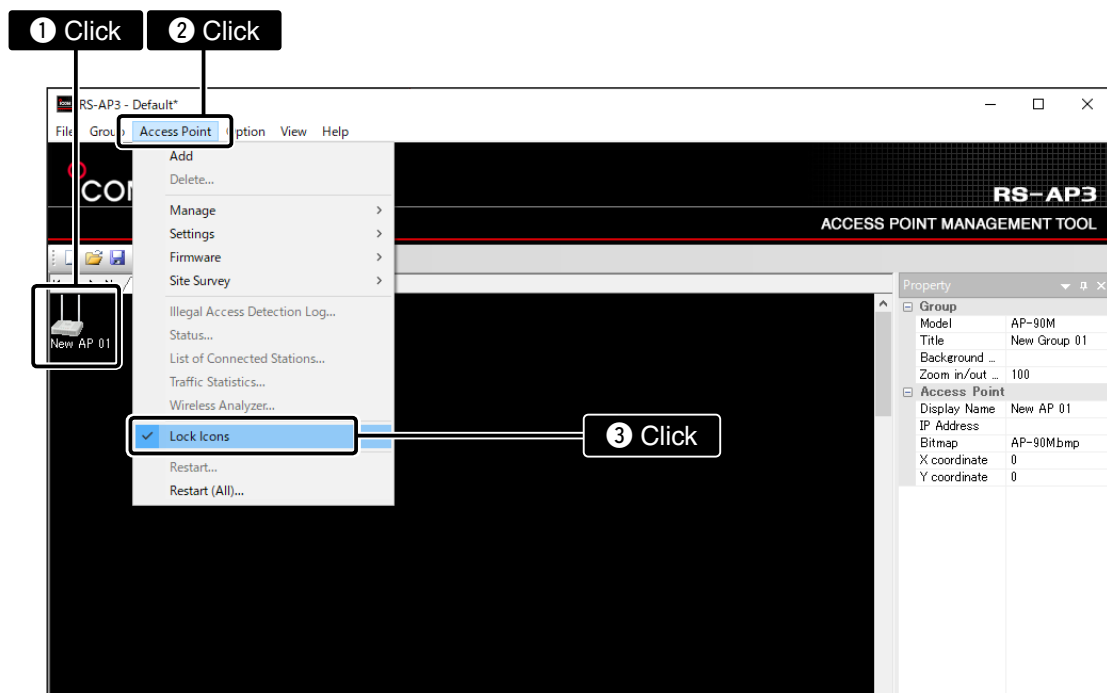

• Even while it is locked, the coordination (positioning) can be changed in Property on the map screen. (☞p.1-10)

3. Starting the RS-AP3 (Continued)

3. Adding wireless access points (Continued)

Deleting a wireless access point
To delete an access point, select the access point on the map screen and click "Access point," and then click Lock icons.

❶ Click

❷ Click

RS-AP3 - Default

| File | Group | Access Point | Option | View | Help |

Add

Delete...   ❸ Click

Manage   >

Settings   >

Firmware   >

Site Survey   >

Illegal Access Detection Log...

Status...

List of Connected Stations...

Traffic Statistics...

Wireless Analyzer...

ACCESS POINT

New AP 01

Proper

⊟ Grou
  Mode
  Title
  Back
  Zoon
⊟ Acc
  Disp
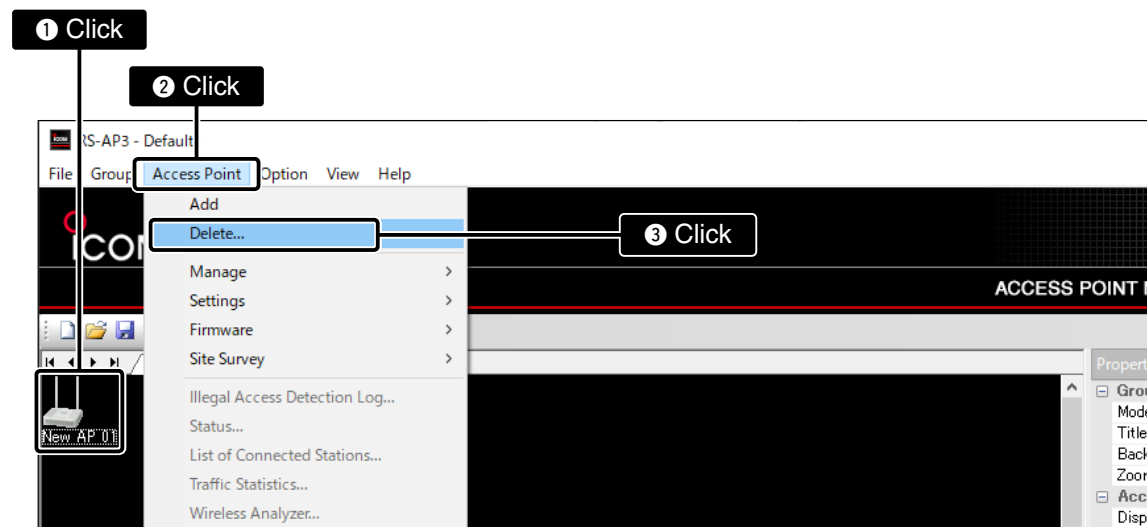
• The icon can also be deleted from the menu that is displayed by right-clicking on the map screen.

3. Starting the RS-AP3 (Continued)

4. Setting wireless access point IP address

1 Select the added access point, and then enter the IP address.
Enter the "Display Name" (of up to 32 characters) and select the icon from the "Bitmap" list.
• To manage the access points with the RS-AP3, you need to enter an IP address.
• Selecting an access point icon on the map screen will display the access point's name and information in the "Property" display.

❶ Click

❷ Set

If necessary, enter "Display Name," "Bitmap," and "X/Y Coordinate."
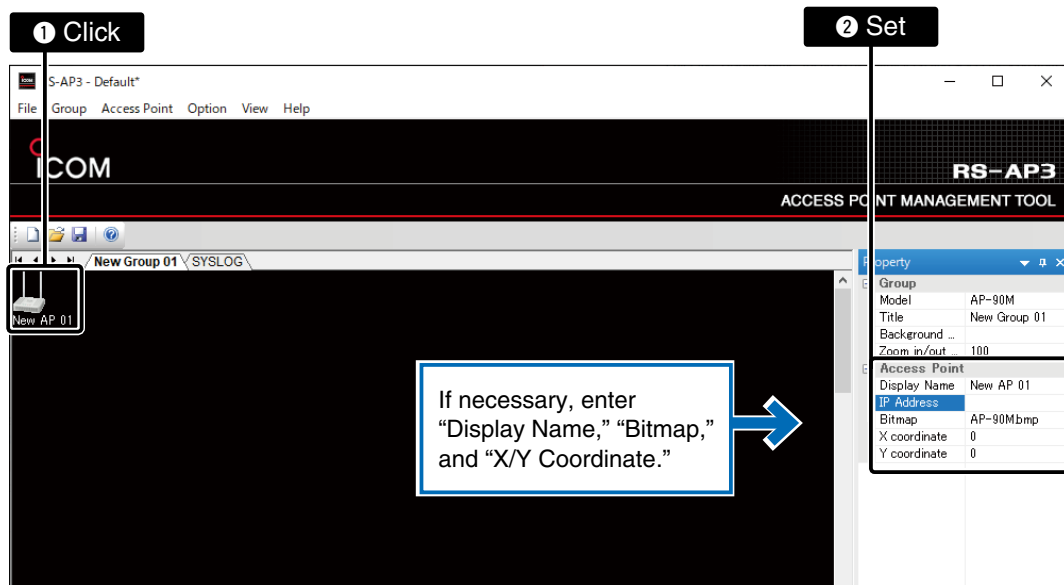
2 Repeat "Adding wireless access points" (☞p.1-8) and the above settings to add access points to the group.

Importing/Exporting access point information

The registered access point's information* can be exported in the CSV format, or the exported file can be imported into the RS-AP3.

• If the access point's IP address is the same as other group's IP address, the information cannot be imported or exported.
• If the information is the same as the registered access point, the information is overwritten.
• An exported file can be edited with a text editor.
• Importing other files than the exported files is not guaranteed.
* Access point information includes group and model title, IP address, display name and coordinates (positioning) on the map screen.
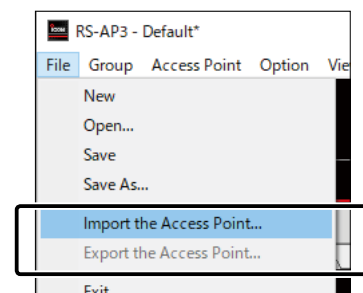
1 USING THE RS-AP3

3. Starting the RS-AP3 (Continued)

5. Saving the access point setting data

Save the access point setting data as a setting file (extension: rsap3) on the PC.
• The last saved setting file automatically loads the next time you start the software.
 We recommend that you do not move the setting file from where you saved it.

1 Click "File" and then "Save As..."
Clicking 💾, or double-clicking Save on the status bar, will also save the setting data.

❶ Click   ❷ Click
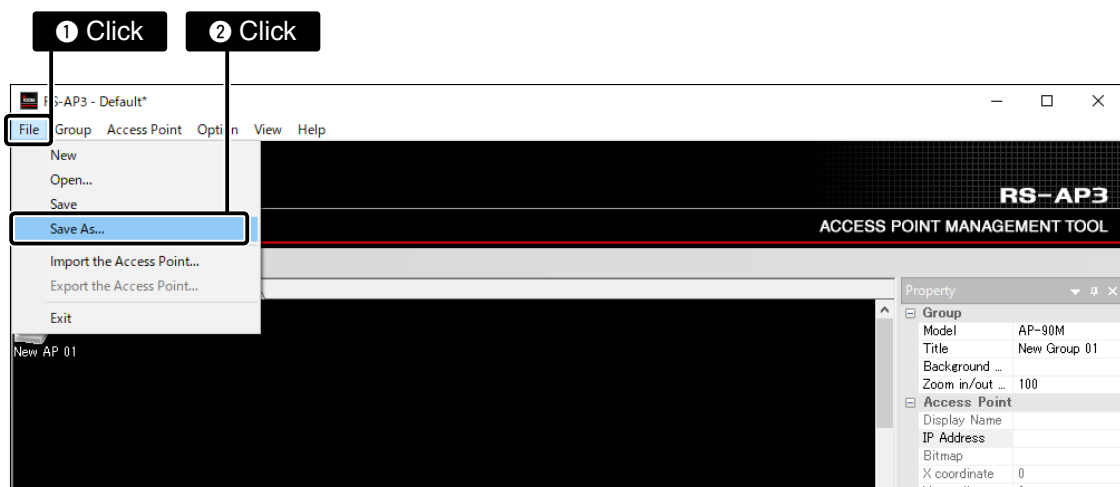
2 When the "Save As..." window is displayed, set the desired file name, and then click [Save].
• The setting file (extension: rsap3) is saved in the selected location.

If necessary, change the location.

❶ Set   ❷ Click
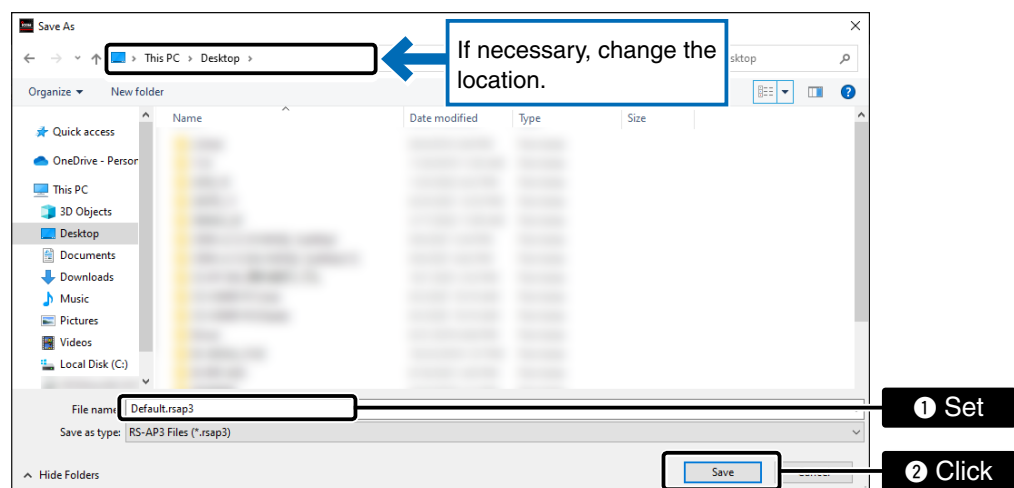
3. Starting the RS-AP3 (Continued)

5. Saving the access point setting data (Continued)

NOTE
When saving a setting file, you must insert the USB flash drive that was used when the RS-AP3 started.
If the dialog to the right is displayed, insert the flash drive, and then click [Retry].

RS-AP3

Insert the USB key into a USB port on your computer.
After Windows finds the USB key, click the Retry button.
(This may take some time.)

Retry   Cancel
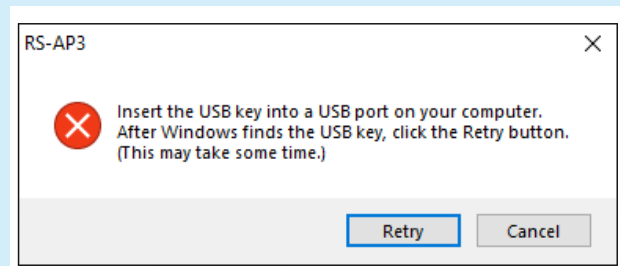
Modifying the settings
If the setting data is modified after the file has been saved, "*" appears on the title bar and the group title.

The settings modified in the individual or common configurations are displayed in bold letters.

---
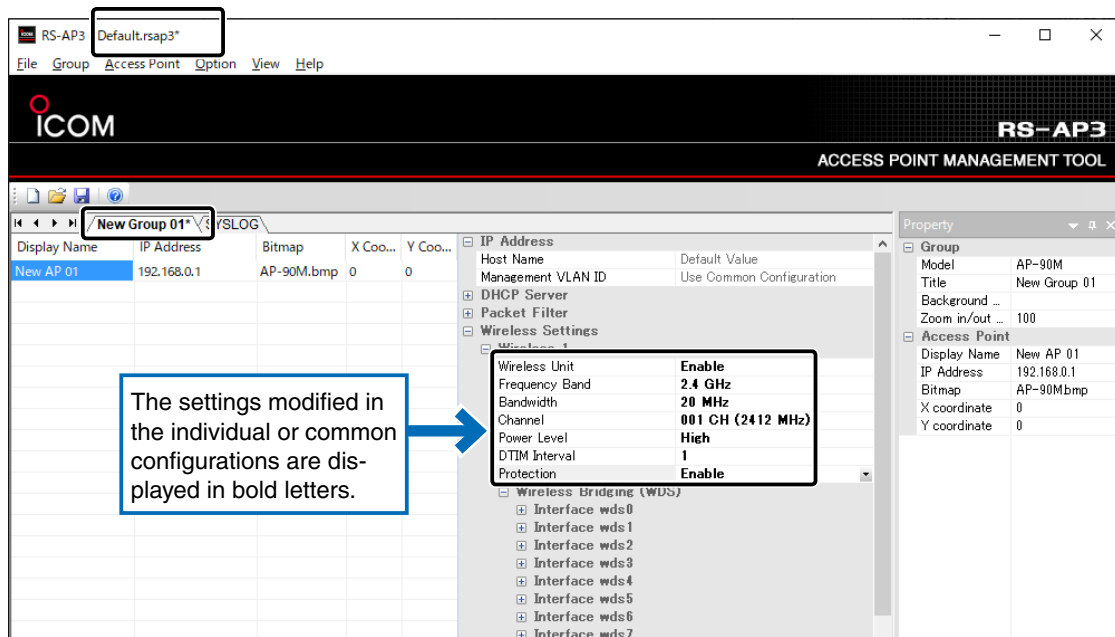
3. Starting the RS-AP3 (Continued)

6. Starting the management

When the management is started, the access point's setting data can be imported (☞p.1-14) or exported (☞p.1-19) from the RS-AP3.
• The settings on the access point setting screen cannot be modified until the management is finished.
• Refer to page 2-7 for the access point status display (color) details.

NOTE

To start the management, you must "Enable" the "Access Point Management Tools."
When you finish the access point management (☞p.1-21), the management tool settings on the access point automatically returns to "Disable."

---

1 Click "Access Point" > "Manage" > "Start (All)..."
• You can select it from the menu that displays by right-clicking on the map screen.
• To start managing the access points one by one, select the access point on the map screen, and then click [Start].

❶ Click   ❷ Click
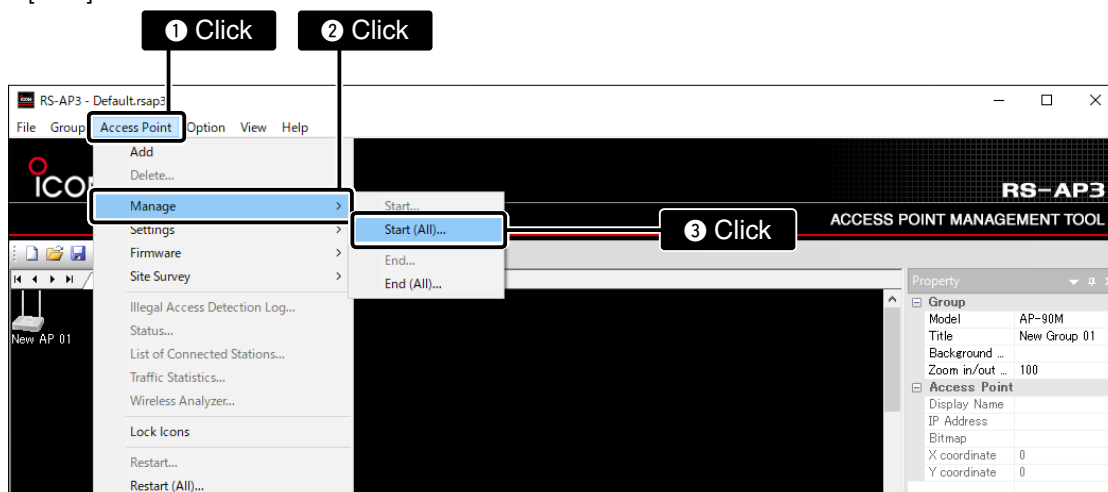
❸ Click

2 Click [Yes].

Click
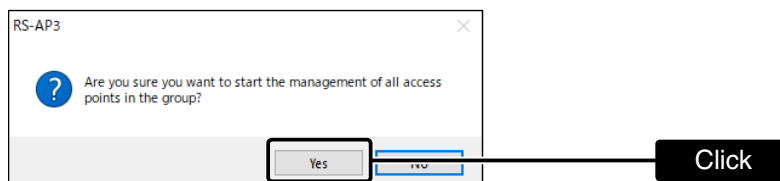
3 When you start the access point management, "Succeeded in the management start command" is displayed.
• If "Failed in the management start command" is displayed, check the access point connection of the IP address.

Check
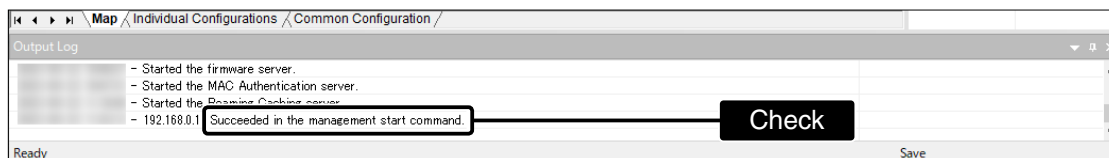
3. Starting the RS-AP3 (Continued)

7. Importing wireless access point settings

To use the contents set to the access points, import the configuration data from the access points.
• To set the "Common Configuration" contents (☞p.5-1) as the access point setting, select the access point on the map screen, and then load the setting data. (☞p.1-15)
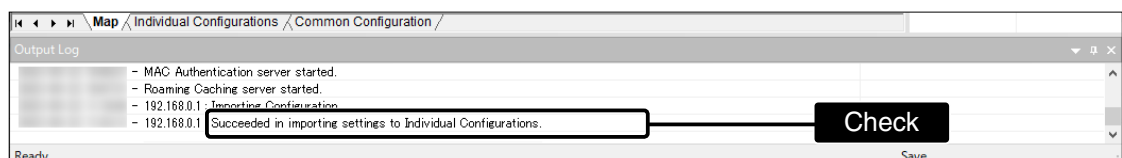
1 Click "Access Point" > "Settings" > "Import to Individual Configurations (All)..."
   • You can select it from the menu that is displayed by right-clicking on the map screen.
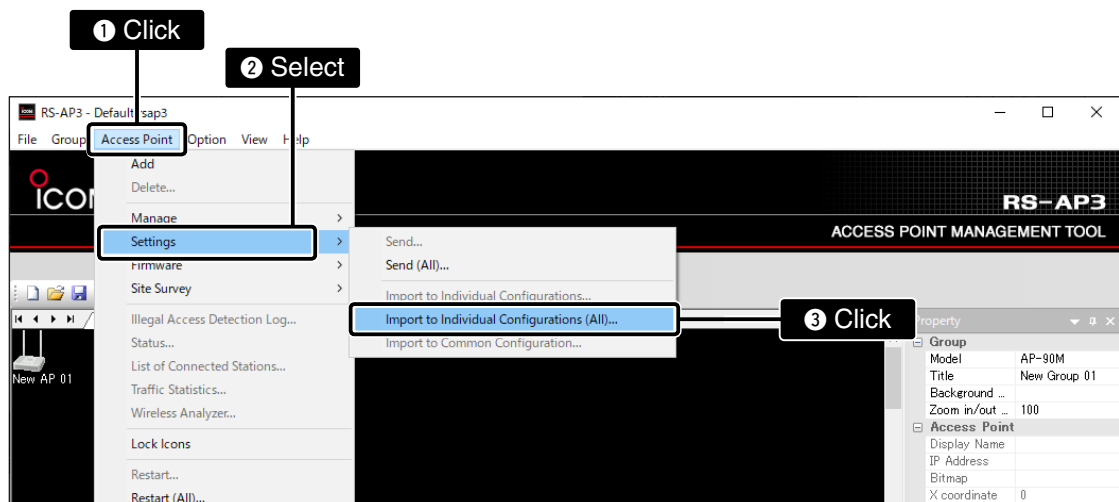
2 Click [Yes].
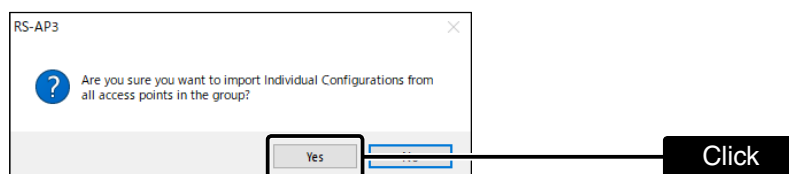
3 When the setting data is imported, "Succeeded in importing settings to Individual Configurations" displays.
   • If "Cannot import to Individual Configurations" is displayed, check the access point connection of the IP address.

3. Starting the RS-AP3 (Continued)

7. Importing wireless access point settings (Continued)

Importing setting data individually from wireless access points
Select the access point on the map screen, and then click "Access Point" > "Settings" > "Import to Individual Configurations..." or "Import to Common Configuration..."
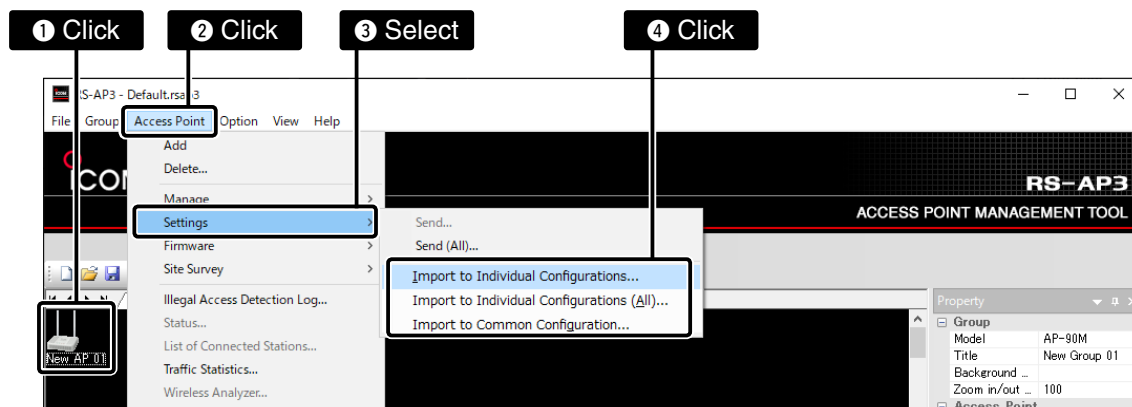
❶ Click   ❷ Click   ❸ Select   ❹ Click

RS-AP3 - Default.rsap3 — □ ×
File Group Access Point Option View Help

Add
Delete...
Manage   >
Settings   >   Send...
Firmware   >   Send (All)...
Site Survey   >
                                       Import to Individual Configurations...
Illegal Access Detection Log...   Import to Individual Configurations (All)...
Status...   Import to Common Configuration...
List of Connected Stations...
Traffic Statistics...
Wireless Analyzer...

RS-AP3
ACCESS POINT MANAGEMENT TOOL

New AP 01

Property
▼ ⓵ ×
⊟ Group
  Model   AP-90M
  Title   New Group 01
  Background ...
  Zoom in/out ... 100
⊟ Access Point

• You can select it from the menu that is displayed by right-clicking on the map screen.

3. Starting the RS-AP3 (Continued)

8. Changing the wireless access point settings

If necessary, click [Individual Configurations] or [Common Configuration] to change the access point setting contents.

Individual Configurations: Individually sets access points
Common Configuration: Sets all access points in the group

• The Individual Configuration contents take prior over the Common Configuration contents.
• To set the common configurations to a different product, you need to separate into different groups to manage.
• Only the same products can be managed in a group.
• Refer to the access point's instruction manual or the setting screen online help.

Setting on the Individual Configurations screen
Select the setting access point from the access point list in the selected group, and then click the setting item.
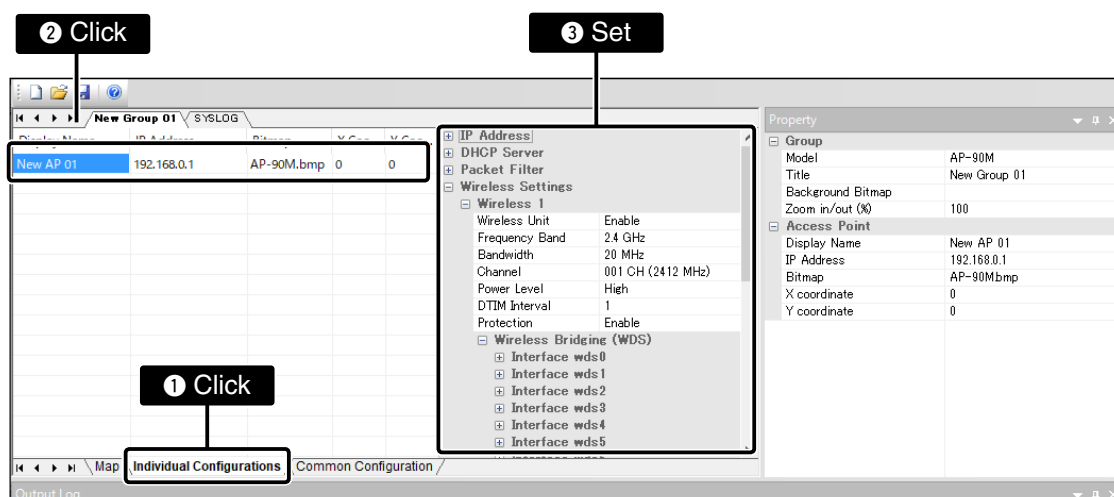
3. Starting the RS-AP3 (Continued)

8. Changing the wireless access point settings (Continued)

Setting on the Common Configuration screen
Among the access points set to the selected group, click the items to set in the group.
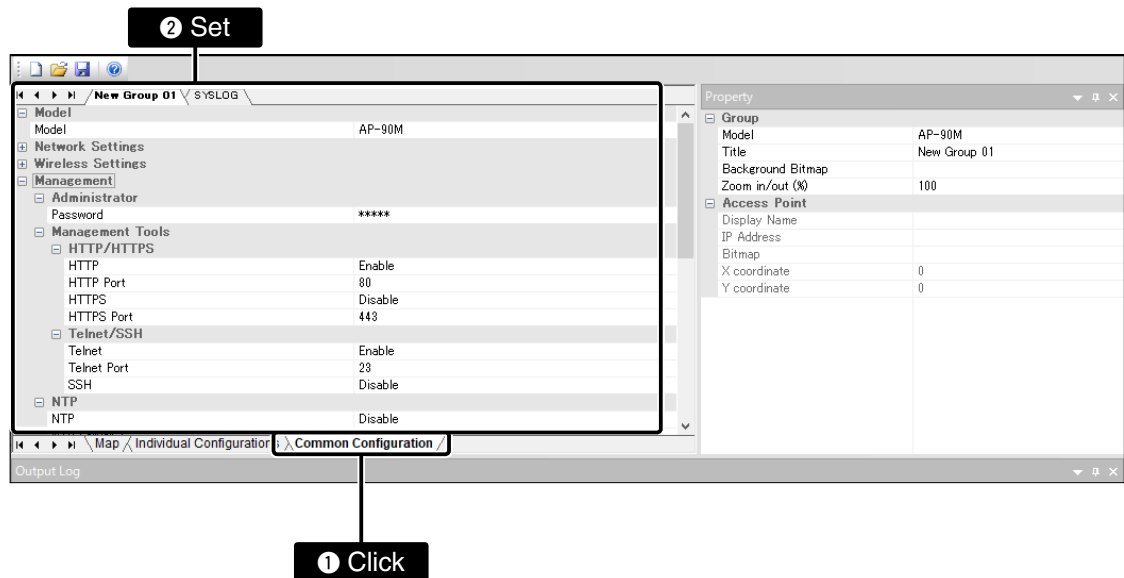
3. Starting the RS-AP3 (Continued)

9. Overwriting the setting data

To apply the modified access point setting contents to the Windows service, click "File" and then "Save" to overwrite the setting file. (extension: rsap3)

• Clicking 💾 or double-clicking Save will also save the file.

• To manage the access points using the saved setting files, save the changes constantly to apply it to the service.
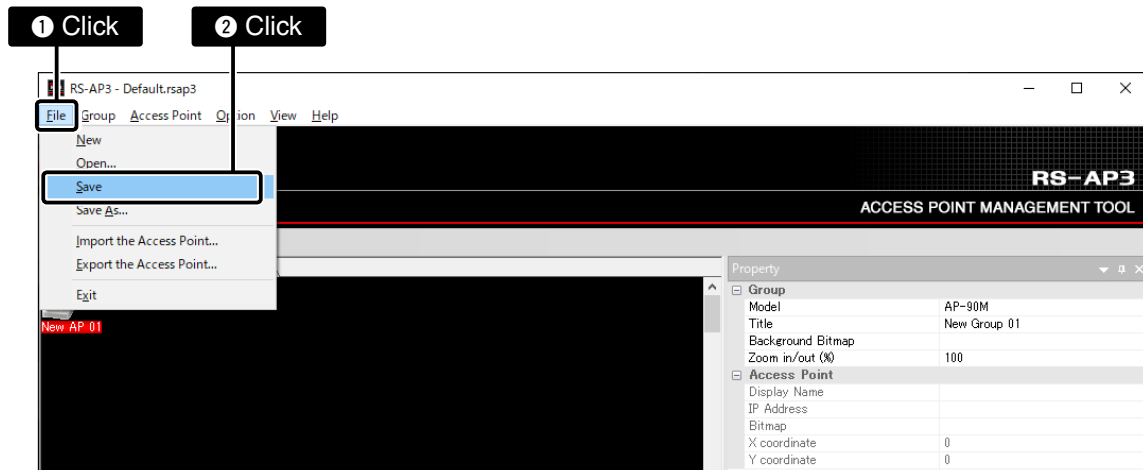
❶ Click   ❷ Click

NOTE
When saving a setting file, you must insert the USB flash drive that was used when the RS-AP3 started.
If the dialog to the right is displayed, insert the flash drive, and then click [Retry].
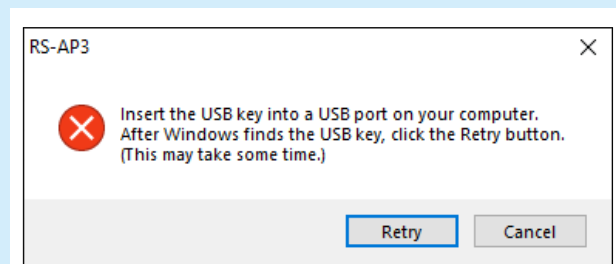
3. Starting the RS-AP3 (Continued)

10.Sending the modified settings

To apply the setting contents modified with the RS-AP3, send the setting data to the managing access points.

1 Click "Access Point" > "Settings" > "Send (All)..."
- You can select it from the menu that appears by right-clicking on the map screen.
- To individually send a setting data by each access point, select the access point on "Individual Configurations" or on the map screen, and then click "Send..."
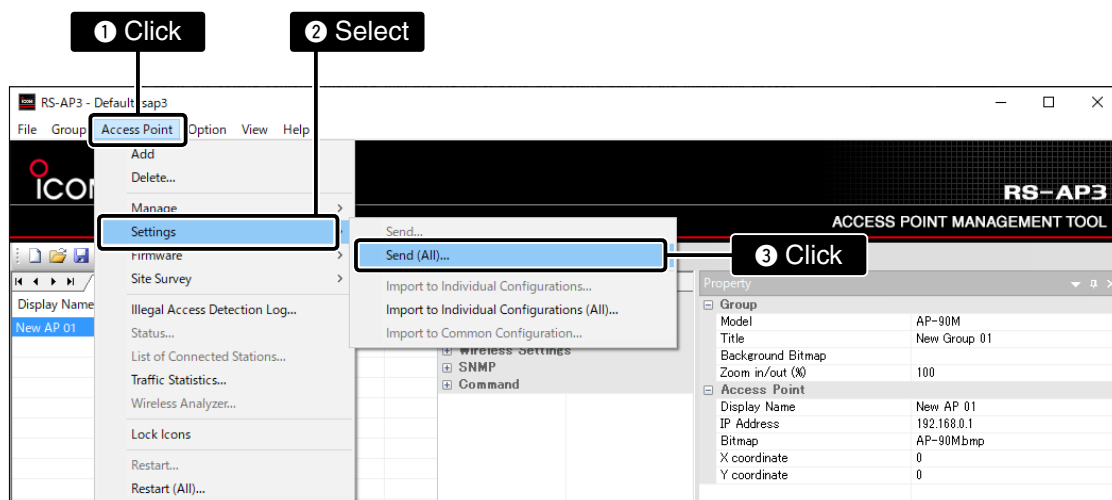

2 Click [Yes].
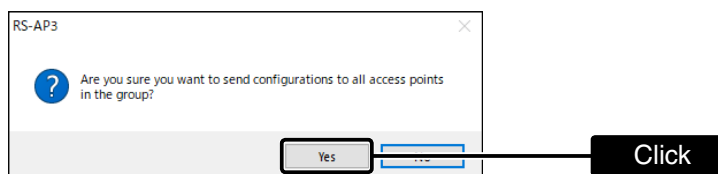
3 When the setting data is sent, "Sending the configuration completed" appears.
- If "Failed to send the configuration" is displayed, check the access point connection of the IP address.
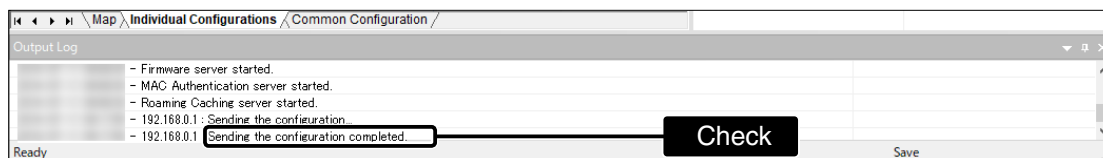
3. Starting the RS-AP3 (Continued)

10.Sending the modified settings (Continued)

NOTE

Before you send the modified settings, you need to save them first.
If the dialog to the right is displayed, click [OK] and then save.
(☞p.1-18)
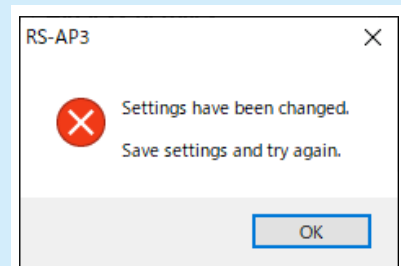
RS-AP3   ✕

Settings have been changed.
Save settings and try again.

OK

1 USING THE RS-AP3

3. Starting the RS-AP3 (Continued)

11. Ending the management

To close the operating screen and continue the management on the Windows service, skip to the steps on page 1-23.
• The settings on the access point setting screen cannot be modified until the management is finished.
• If there are multiple groups to manage, finish the management one by one.

> **NOTE**
>
> When you finish the access point management, the management tool settings on the access points automatically returns to "Disable."
> To start the management, you must "Enable" the "Access Point Management Tools." (☞p.1-4)

1 Click "Access Point" > "Manage" > "End (All)..."
    • You can select it from the menu that displays by right-clicking on the map screen.
    • To end a setting data by access point, select the access point on "Individual Configurations" or on the map screen, and then click "End..."
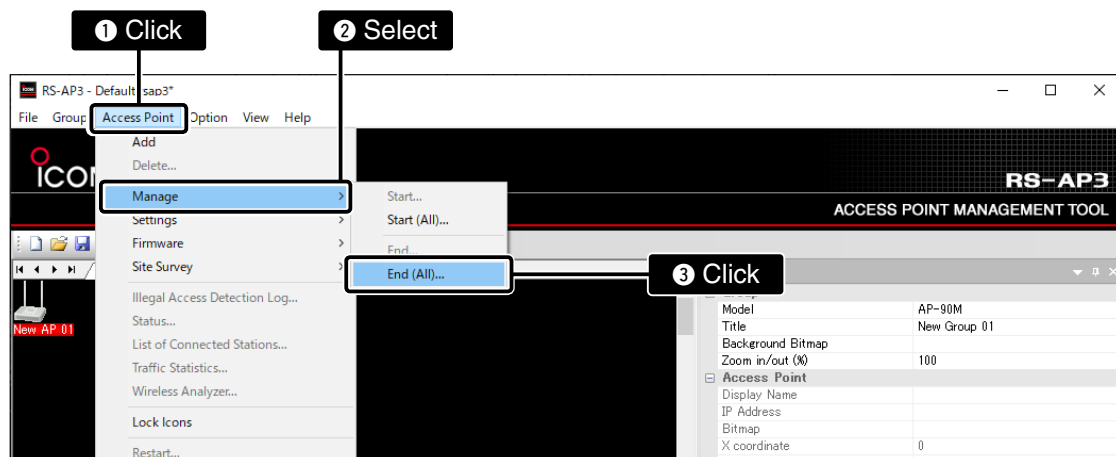
2 Click [Yes].
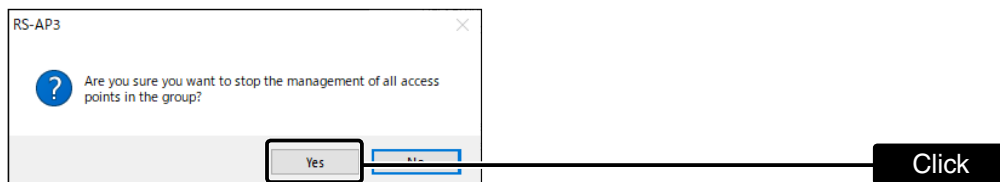
3. Starting the RS-AP3 (Continued)

11. Ending the management (Continued)

3 When the access point management is ended, "Sending the management stop command succeeded" displays.

• If "Failed in the management stop command" is displayed, check the connection for the access point of the its IP address.
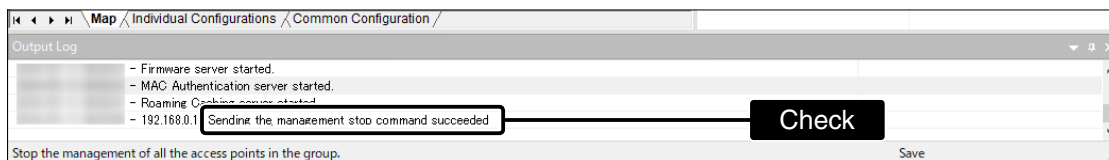
3. Starting the RS-AP3 (Continued)

12.Closing the RS-AP3

Click "File," and then "Exit" to close the RS-AP3.
• Clicking [X] also closes the RS-AP3.
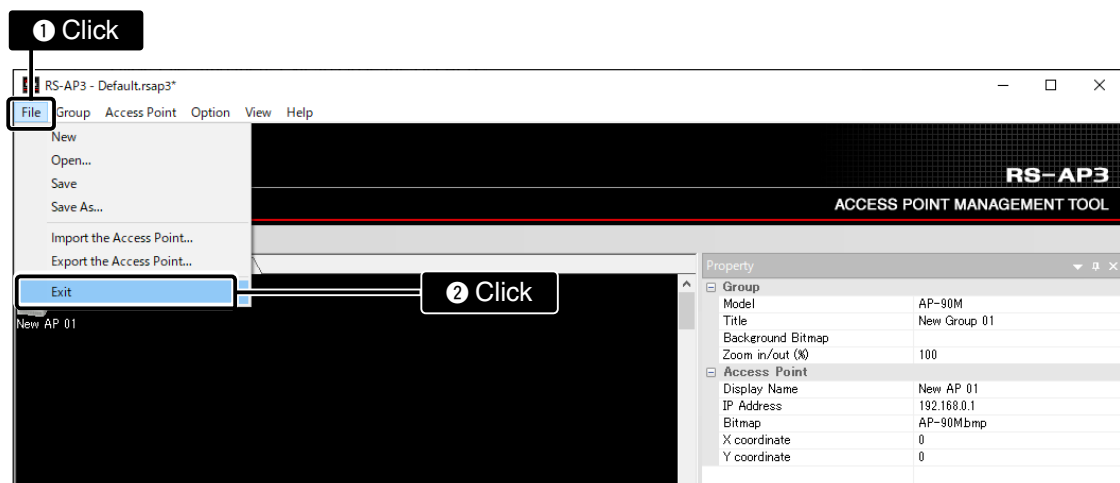
If the management is not ended:
While managing an access point, and the "Exit" is selected, the dialog below appears.
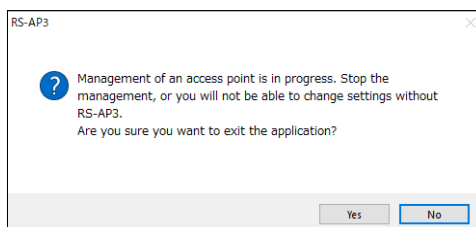
• To continue the management, click [Yes].
  ➡ The RS-AP3 will close (Setting with other than the RS-AP3 is disabled.)
• To end the management:
  1. Click [No], and then click "Access Point" > "Manage" > "End All..."
  2. Click "File," and then "Exit" to close the RS-AP3.
  ➡ If there are multiple groups to manage, finish the management one by one.

OPERATING SCREEN

2

2 OPERATING SCREEN

1. Screen description

Refer to the pages shown after the item for each operation displayed on the operation screen.

Top menu
(☞p.3-1 to p.3-36)

Property screen
(☞p.2-9 to 2-11)

Title bar
(☞p.1-12)

Tool bar
(☞p.2-3)

Group tab/
SYSLOG tab
(☞p.2-4)

Map screen
(☞p.2-6)

Map tab/ **Individual Configurations**/
Common Configuration tab
(☞p.2-5)

Output Log screen
(☞p.2-8)

RS-AP3 - Default*

File Group Access Point Option View Help

ICOM

RS-AP3
ACCESS POINT MANAGEMENT TOOL

New Group 01 / SYSLOG

Property

☐ **Group**
Model   AP-90M
Title   New Group 01
Background ...
Zoom in/out ... 100

☐ **Access Point**
Display Name
IP Address
Bitmap
X coordinate   0
Y coordinate   0

Map / Individual Configurations / Common Configuration /

Output Log

15:39:27 – Firmware server started.
15:39:27 – MAC Authentication server started.
15:39:27 – Roaming Caching server started.
15:39:40 – Settings of New Group 01 were changed. Save settings to a file to apply them to the service.

Ready   Save

Status bar
Displays explanations for the selected operation.

2 OPERATING SCREEN

2. Tool bar

The Tool bar is used to create, open or save a new RS-AP3 setting file.
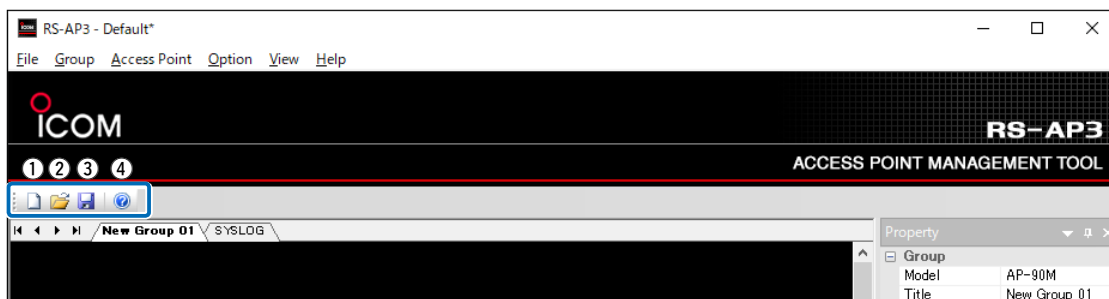
① 📄 **New(Ctrl+N)** ....Creates a new document.

② 📂 **Open(Ctrl+O)** .... Opens an existing document.
- To open a document (extension: rsap3) saved with a different User ID and password, enter the ID and password you used when you saved the document, in the dialog shown below.
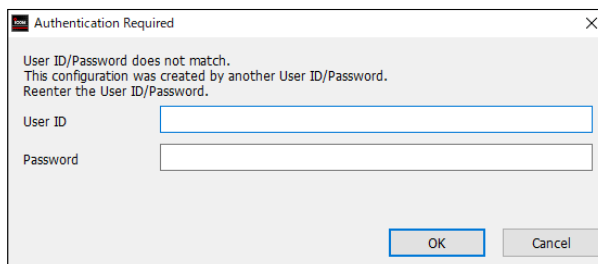
③ 💾 **Save(Ctrl+S)** .... Saves the active document.
- When saving for the first time, you need to first name the document, then save it.

④ ❓ **About** .... Displays the program information, version number, and the copyright.

3. Group tab and SYSLOG tab

The tabs are used for access point management, or to check the SYSLOG.

When the [Group] tab (Example: New Group 01) is clicked.
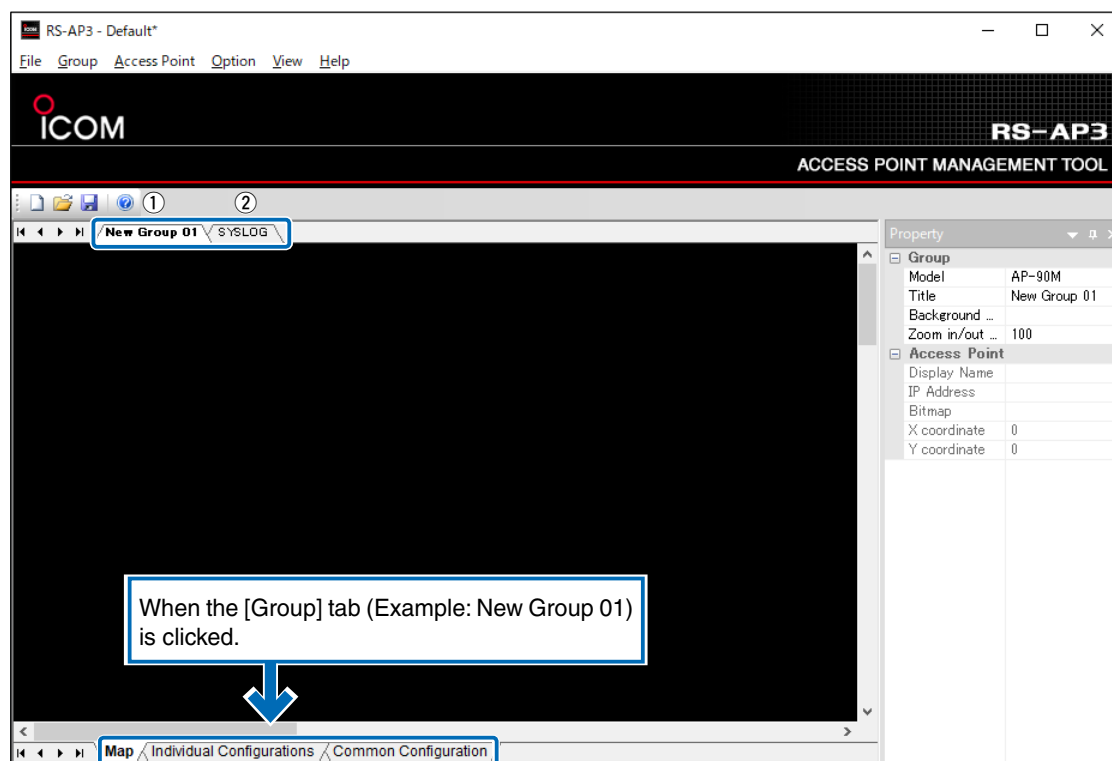
① **Group tab**......................When you want to manage networks by floors, you can divide the access points into groups.
- Only the same model of access points can be managed in a group.
- To set the common configurations for a different access point, you need to separate into different groups to manage.
- The group title can be changed in the "Property" screen. (☞p.2-9)
- The groups can be added or deleted by right-clicking the Group tab, or from the Group menu. (☞p.3-3)

② **SYSLOG tab**...................Displays the RS-AP3's SYSLOG (log history.) (☞p.2-12)

4. Map tab, Individual tab and Common tab

The tabs displayed on the operation screen when [Group] (example: New Group 01) is clicked.
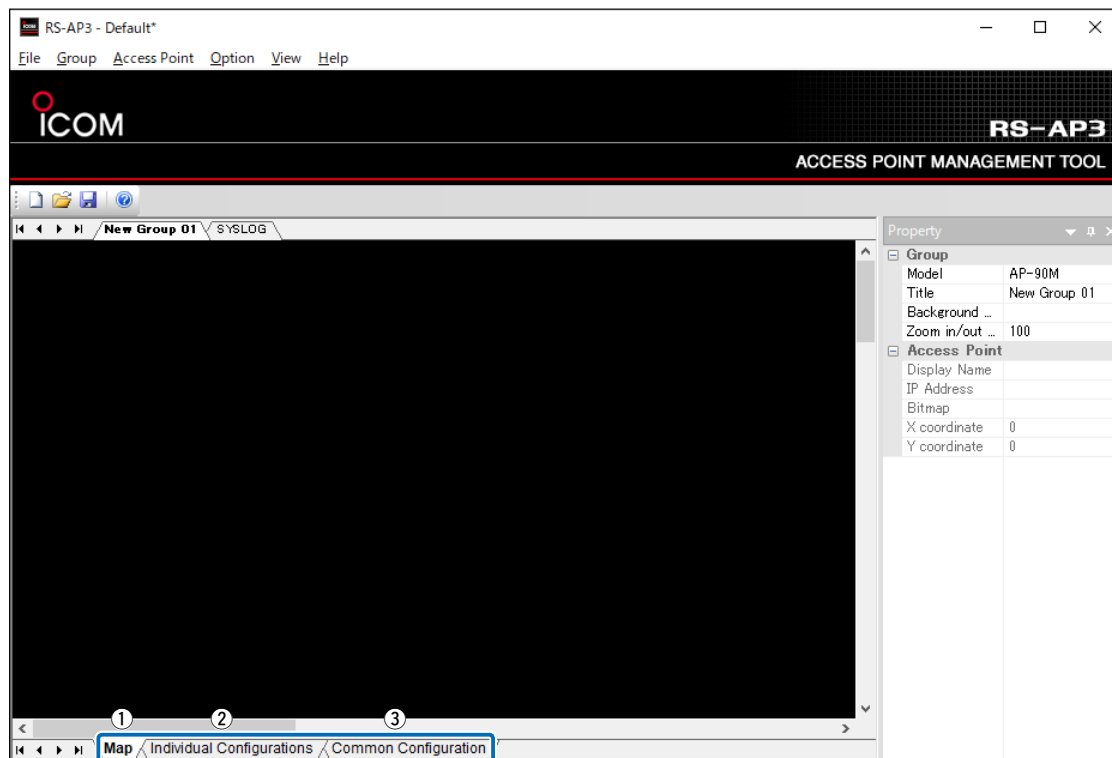
① **Map tab** .... Click to display the map screen. (☞p.2-6)
It is used to add or manage access points.

② **Individual Configurations tab** .... Click to display the Individual Configurations screen. (☞p.4-1)
It is used to set access points one by one.

③ **Common Configuration tab** .... Click to display the Common Configuration screen. (☞p.5-1)
It is used to set access points by groups.

5. Map screen

The screen allows you to add, delete and manage access points by selected groups.

Group tab/
(☞p.2-4)

You can display the access point management status by locating the cursor.
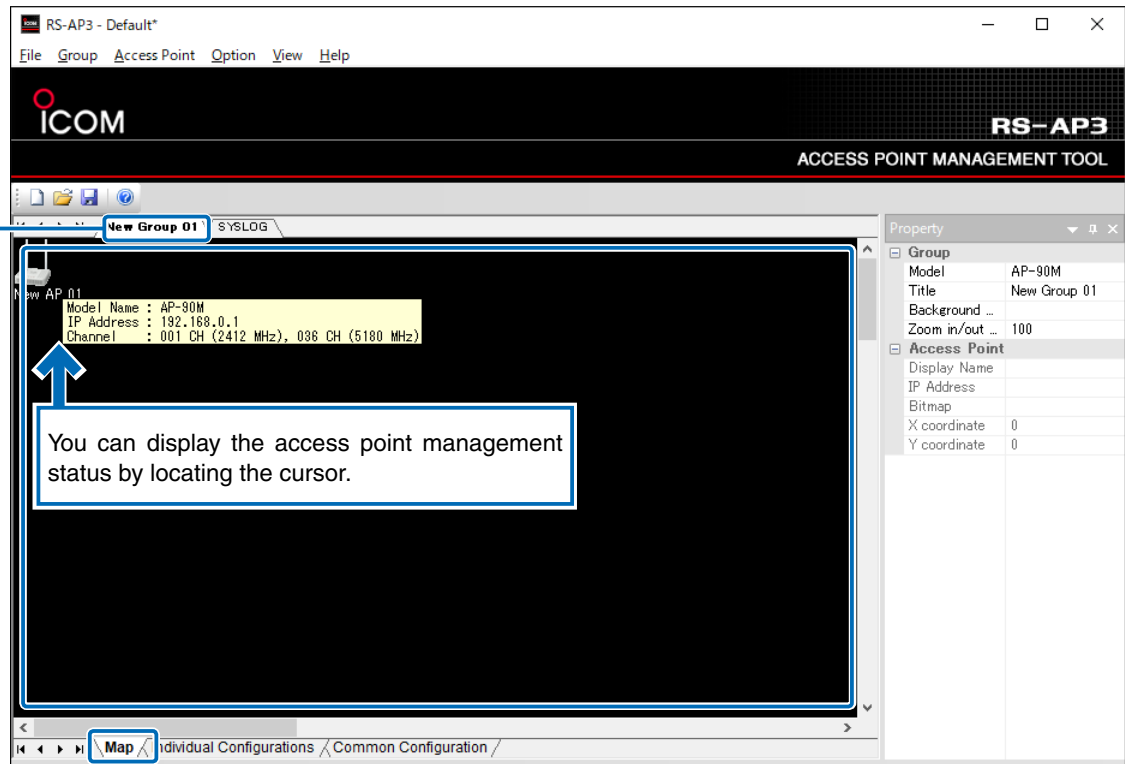
Access points can be added or deleted from the "Access Point" menu.
• You can also do the same from the menu displays by right-clicking on the map screen.
• To set the background, save the desired bitmap formatted (24 bit) image file in the "BG" folder that is located in the same location where the RS-AP3 is installed. (☞p.6-14)

5. Map screen (Continued)

Wireless access point title blinks

The access point status blinks in colors.

| Icon (example)	Blinking color	Status
	Red	• Communication not yet established. • Management not started. • No notification from the access point for more than the time set in "Fault Log Timer" (☞p.3-34). • Rebooting. • Firmware updating. – When the blinking is caused by other than [No notification from the access point for more than the time set in "Fault Log Timer"], is when the communication is not yet established. This status is also applied when overwriting a file or starting the RS-AP3.
	Red (Characters)	• The virtual AP is suspended by the network monitoring. • Wireless is paused during the assigned wireless shutdown schedule. • Wireless is paused because wireless 1 and 2 frequency bands (2.4 GHz/5GHz) are set identically.
	Yellow	Detected illegal access.
	Orange	• Checking for radar for DFS. • The automatic control is enabled. • Scanning channels as a wireless bridging client. • Site surveying.
	Grey	Firmware update is necessary. • Despite the old and new version of the access point.
	Purple	Discrepancy in the settings between the RS-AP3 and the access point. • Besides settings, when the hash value is incorrect when importing the settings, blinks in purple. In this case, the setting data needs to be sent.
	Blue	Sending the setting data.

6. Output Log screen

This screen displays the information on the server or the illegal access detection log history.
When the log saving setting (☞p.3-27) is enabled, the log is displayed on the operation screen and saved in the log file.
In total of 1000 lines can be displayed, and the older lines are automaitcally deleted.
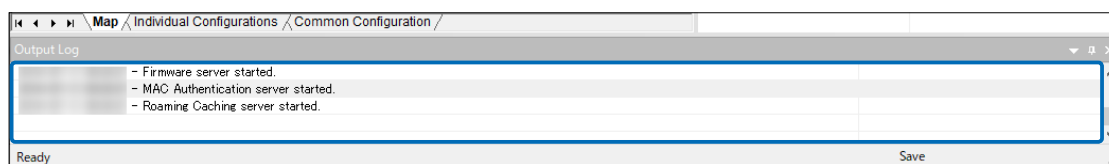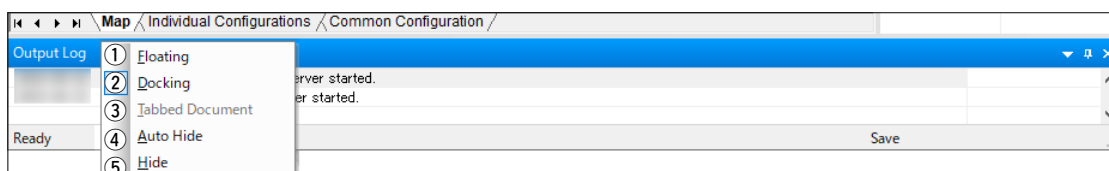
About the Log

Right-click on the "Output Log" screen, the menu as shown below.
• To deselect the selected log, click the selected line while pushing [Ctrl].
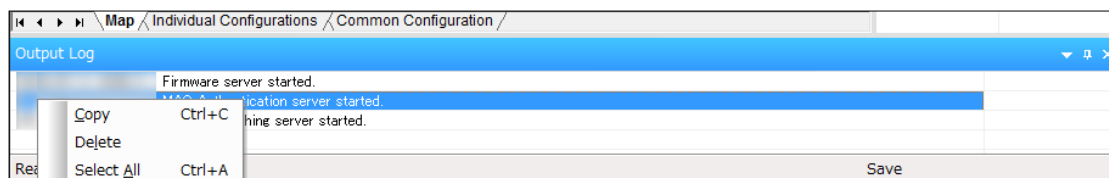
About the Output Log screen display

Right-click on the "Output Log (Output Log)," the menu as shown below.

① **Floating** ....Displays only the "Log Output" screen.

② **Docking** ....The "Log Output" screen and the operation screen are combined.
("Docking" is set as default)

③ **Tabbed Document** ....This menu is disabled at all times.

④ **Auto Hide** ....Automatically hides the "Log Output" screen while not used.

⑤ **Hide** ....Hides the "Log Output" screen.
• To display the "Log Output" screen, select "Log Output" in the "View" menu. (☞p.3-35)

7. Property screen

The Property screen displays the title (Group name), background, selected access point name, and IP address, and you can set them on this screen.
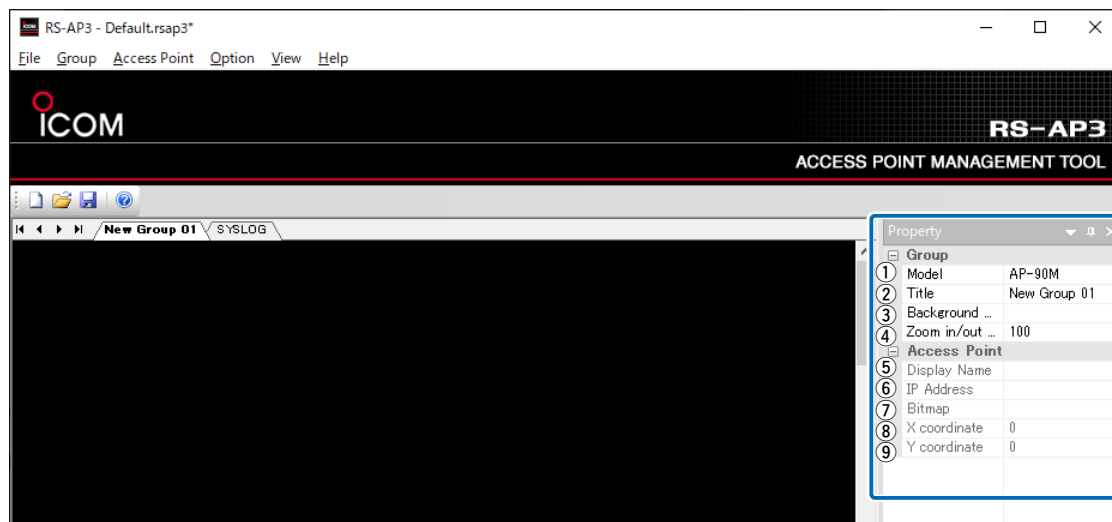
① **Model**..............................Displays the selected group's model.

② **Title**................................Displays the selected group's title of up to 32 characters.
The title is also displayed on the Group tab. (☞p.2-4)

③ **Background Bitmap**......A bitmap image file (24 bit color) saved in the "BG" folder can be set as the background image. (☞p.6-14)
 • The "BG" folder is located in "Icom" > "RS-AP3" in the RS-AP3 installation folder.
 • If the image is not located in the folder, this option cannot be selected.

④ **Zoom in/out** ....Zooms in or out the background between 50~300 %.

⑤ **Display Name** ....Enter the display name of the access point selected on the map, of up to 32 characters.
 • The entered name will display on the map screen and the "Individual Configuration" screen.

⑥ **IP Address** ....Displays the IP address set to the access point selected on the map screen.
 • Make sure that the correct IP address is set, otherwise the management cannot be started.

⑦ **Bitmap**............................Select the access point icon to display on the map screen.
The bitmap automatically changes, depending on the model settings.(☞p.1-7)

7. Property screen (Continued)
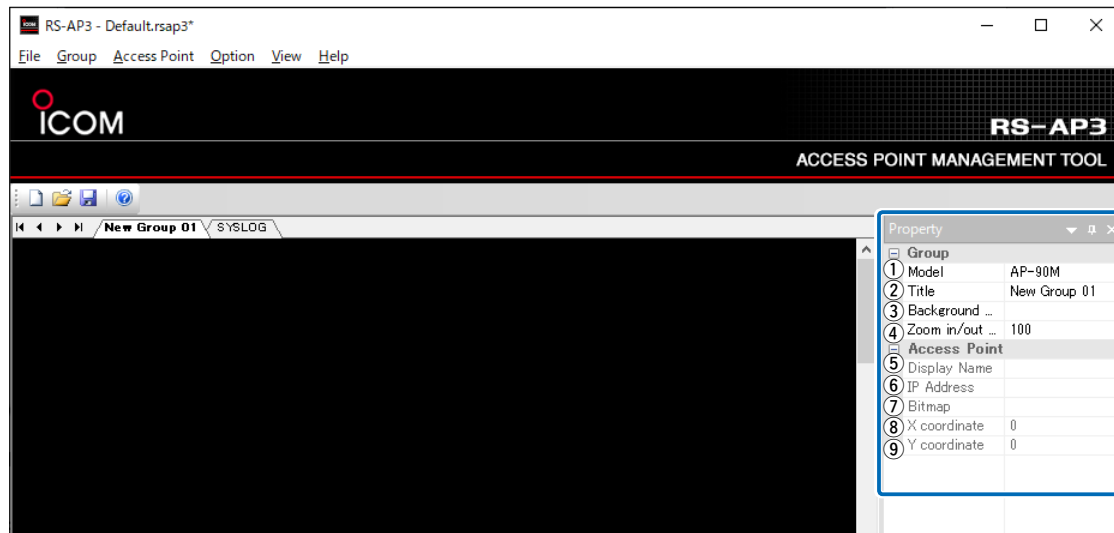
⑧ **X Coordinate**.................. Displays and sets the access point icon's horizontal coordination.
Set between 0 and 2048.

⑨ **Y Coordinate**.................. Displays and sets the access point icon's vertical coordination.
Set between 0 and 2048.

7. Property screen (Continued)

About the Property screen display

Click on the Property screen to display the screen as shown below.
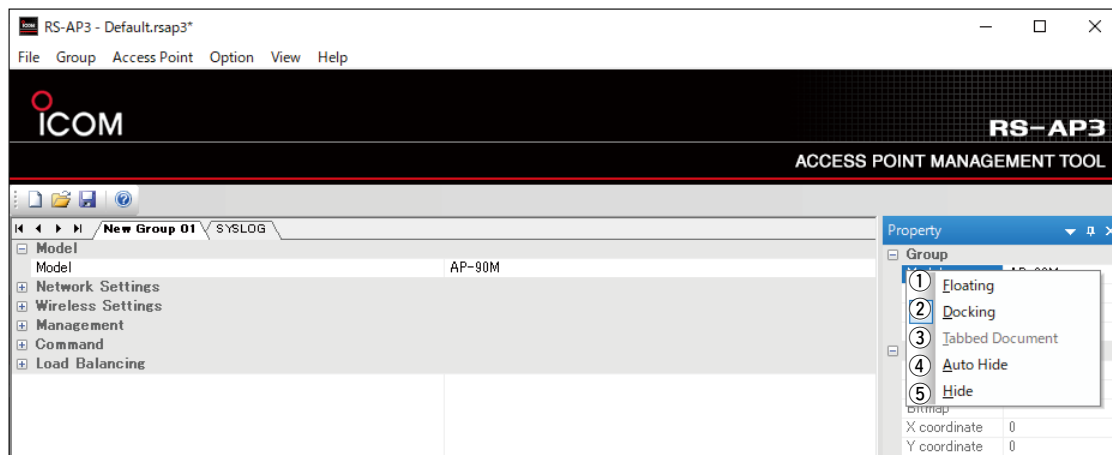
① **Floating** .... Displays only the "Property" screen.

② **Docking** .... The "Property" screen and the operation screen are combined.

("Docking" is set as default)

③ **Tabbed Document** .... This menu is disabled at all times.

④ **Auto Hide** .... Automatically hides the "Property" screen while not used.

⑤ **Hide** .... Hides the "Property" screen.

8. SYSLOG screen

Click the "SYSLOG" tab to display the log information.
In total of 1000 lines can be displayed, and the older lines are automatically deleted.
• To save the log information, make sure "Option" > "Save Log" > "SYSLOG" is selected. (☞p.2-15, p.3-27)

SYSLOG tab
(☞p.2-4)
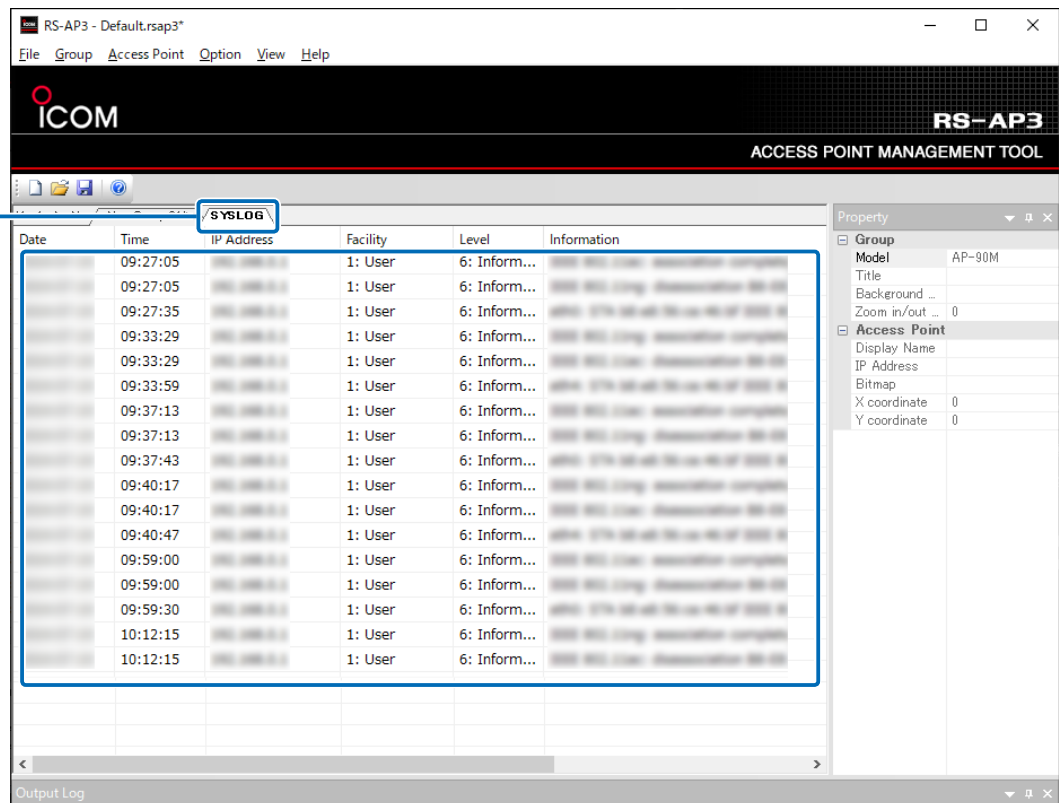
• SYSLOG is saved separately by date and IP address (extension: txt), and also divided by approximately 64 KB files.

8. SYSLOG screen (Continued)

About the Filter

Right-click on the "SYSLOG" screen to extract the desired log information from "Filter."

Extracting by "Date and Time..."
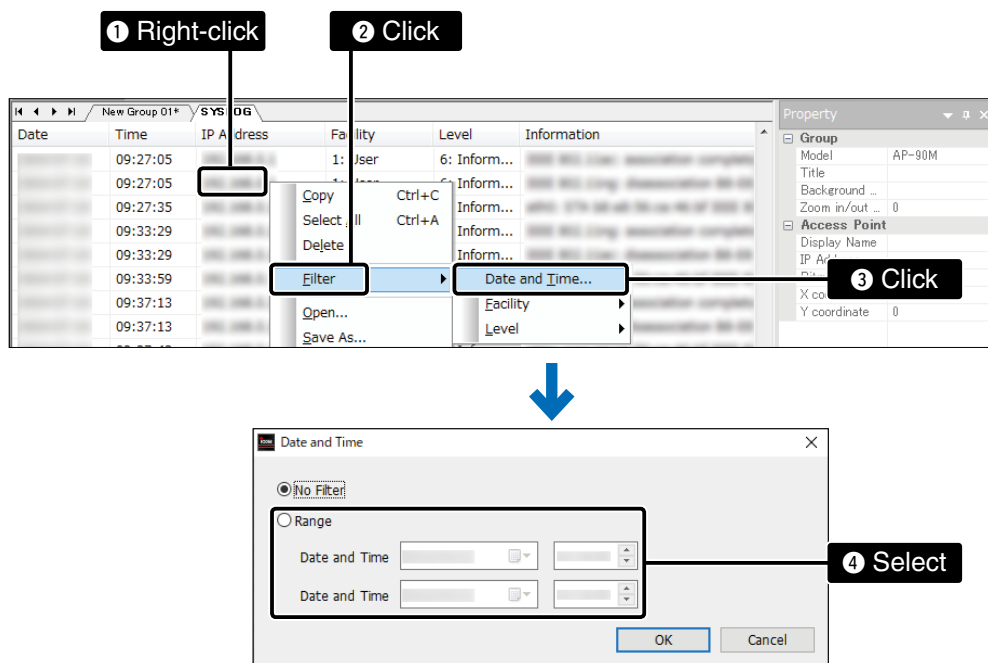
Extracting by "Facility"
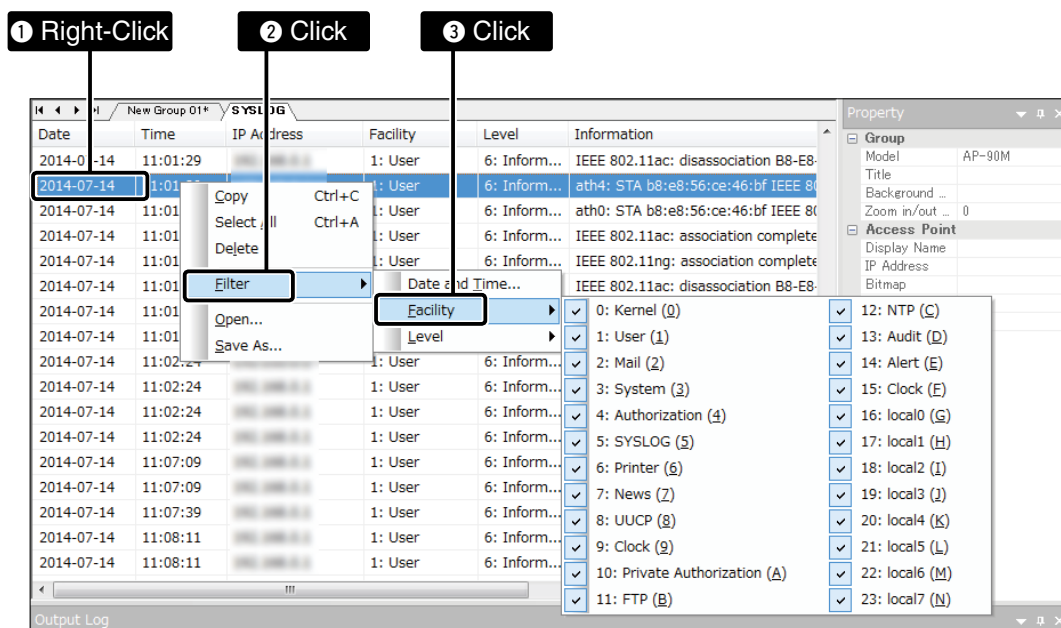
2-13

8. SYSLOG screen (Continued)

❶ Right-click   ❷ Click   ❸ Click

the Filter (Continued)

ting by "Level"
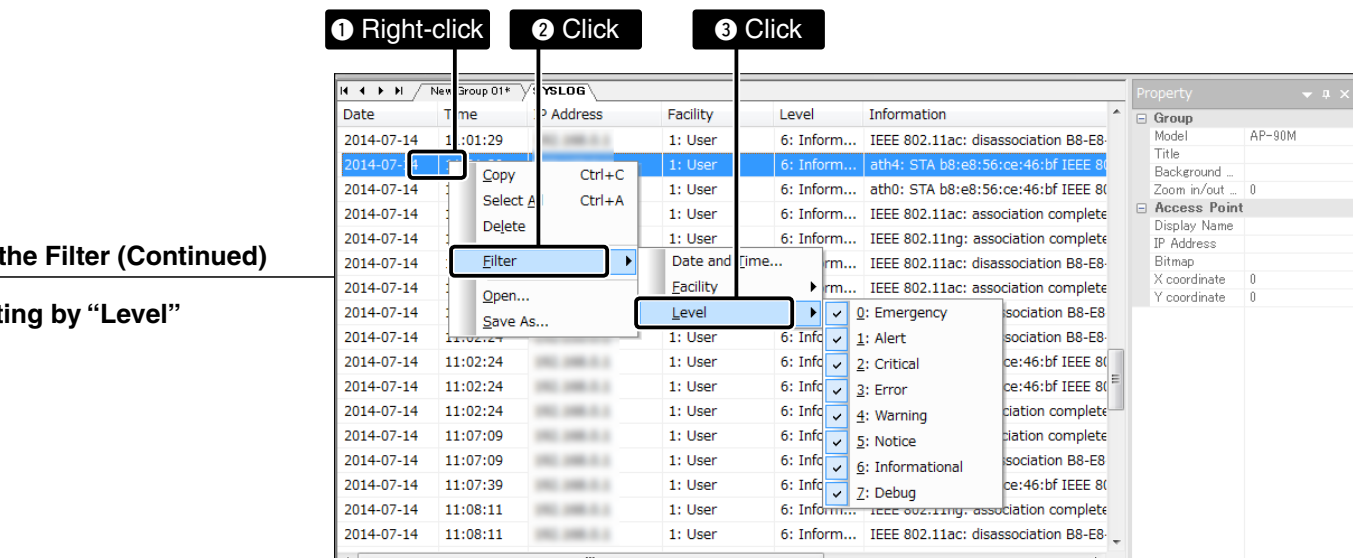
8. SYSLOG screen (Continued)

Log Folder setting

Follow the instructions below to change the folder to save SYSLOG in.
• We recommend that you use a Solid State Drive (SSD) rather than a Hard Disk Drive (HDD) for saving the logs.
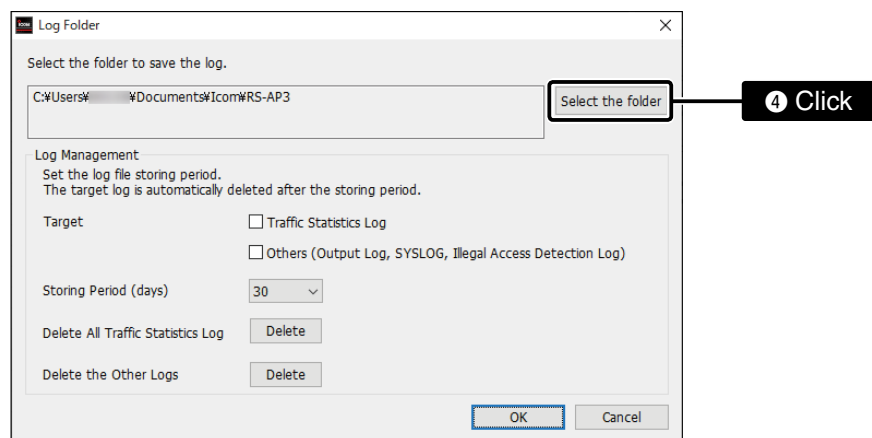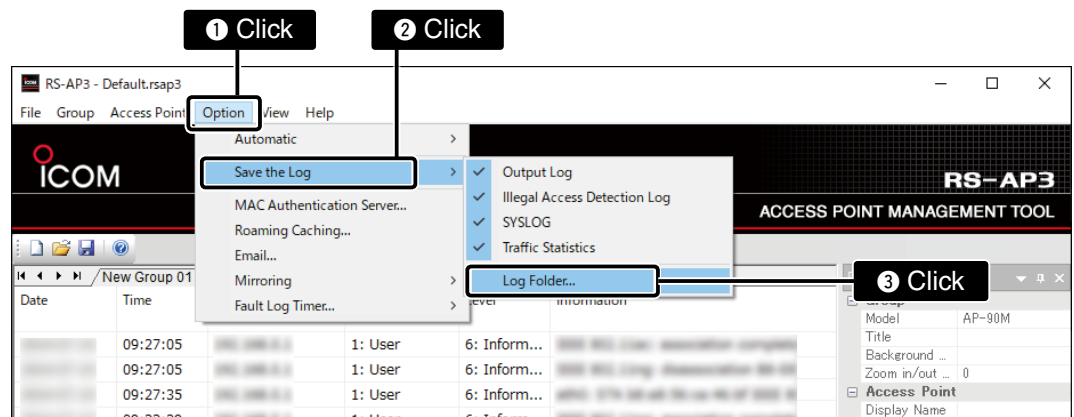
8. SYSLOG screen (Continued)

Opening SYSLOG

Right-click on the "SYSLOG" screen and select "Open" to open a SYSLOG file (extension: txt).

MENU

3

3 MENU

1. File menu

The File menu is used to create, open or save a new RS-AP3 setting file (extension: rsap3).

① **New(Ctrl+N)** .... Creates a new document.

② **Open(Ctrl+O)** .... Opens an existing document.
  • To open a document (extension: rsap3) saved with a different User ID and password, you need to enter the ID and password you entered when you saved the document, in the dialog shown below.
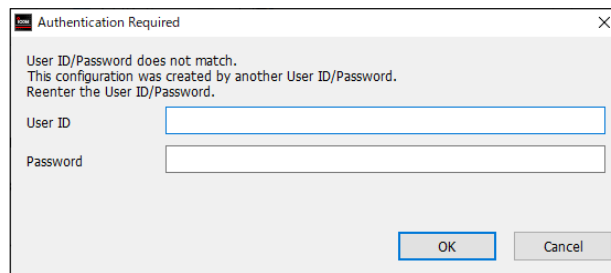
③ **Save(Ctrl+S)** .... Saves the active document.

④ **Save As...** .... Saves the active document with a new name.

⑤ **Import the Access Point...** .... Imports access point information file (extension: csv) to the RS-AP3.
  • If the information same as the registered access point is imported, the information is overwritten.
  • You can import only the file that is exported from [Export the Access Point] (⑥).

⑥ **Export the Access Point...** .... The registered access point information can be exported (extension: csv)
  • Access point information includes group and model title, access point IP address, display name and coordinates (positioning) on the map screen.
  • An exported file can be edited with a text editor.

⑦ **Exit** .... Closes the RS-AP3
  • Clicking [X] also closes the RS-AP3.
 • To continue managing with the Windows service, save the changes and close RS-AP3 operating screen.

2. Group menu

The Group menu is used to add or delete a group.
• Only the same model access points can be managed in a group.
• To set the common configurations for a different access point, you need to separate into different groups to manage.
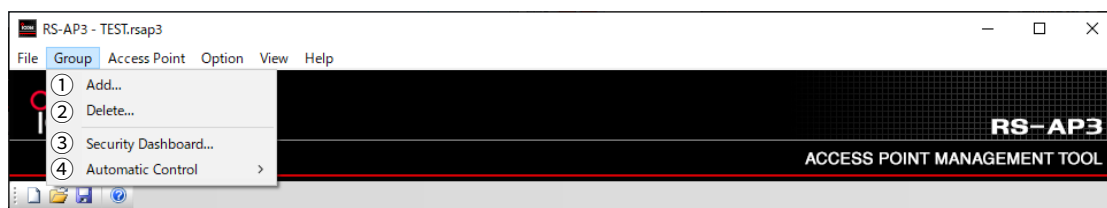• While selecting the "SYSLOG" screen, [Delete...] is displayed in grey.
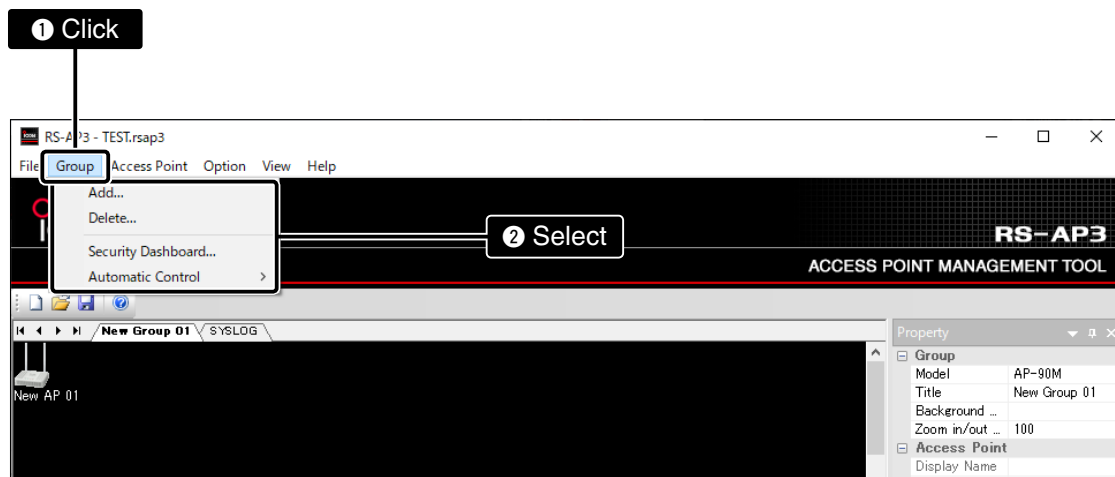
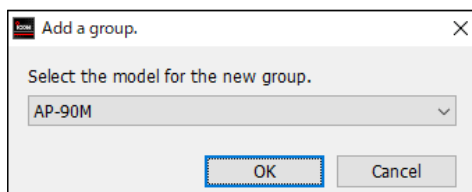
Selecting a group by right-clicking

---
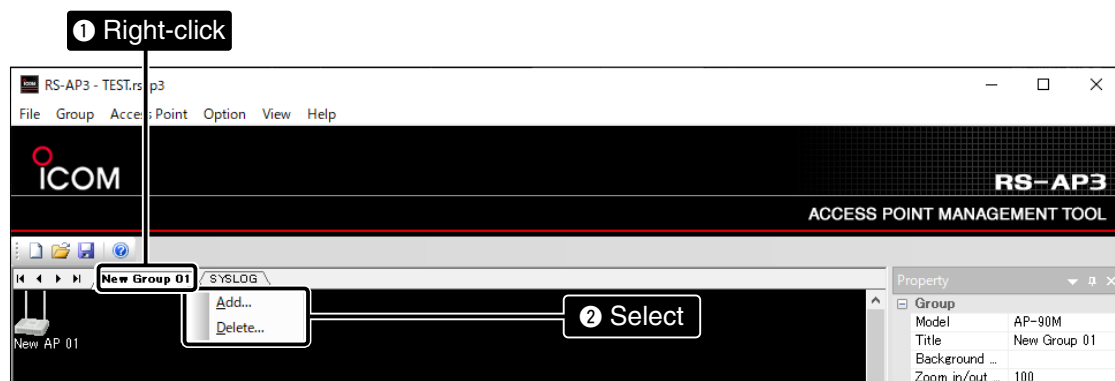
2. Group menu (Continued)

① **Add**...Adds a group.
Click to display the "Add a group" dialog.

Select the access point model for the new group, and then click [OK].

② **Delete**.......................................Deletes a selected group.
• The selected group's access point information is also deleted.
• Confirm that the selected group and the access point information is deleted.
• While managing an access point, its settings cannot be modified on the access point setting screen.
If you have mistakenly deleted a managing group, add a group and access points and set them again.

Setting the Title (group name)/Background Bitmap
• If necessary, enter a title (group name) of up to 32 characters from the "Property" screen.
• Click "Background Bitmap" on the "Property" screen to select a 24 bit bitmap formatted image file saved in the "BG" folder located in the RS-AP3 installed folder.
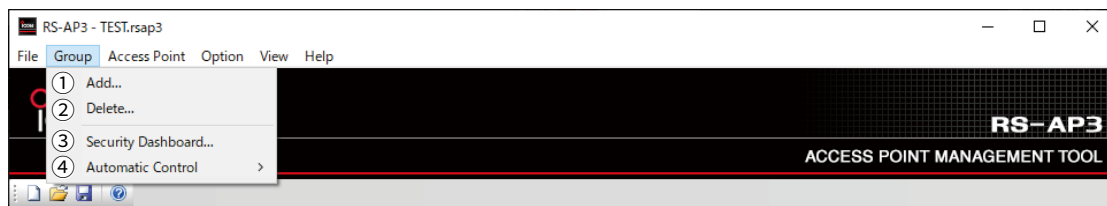Refer to "Background bitmap setting" on page 6-14 for details.
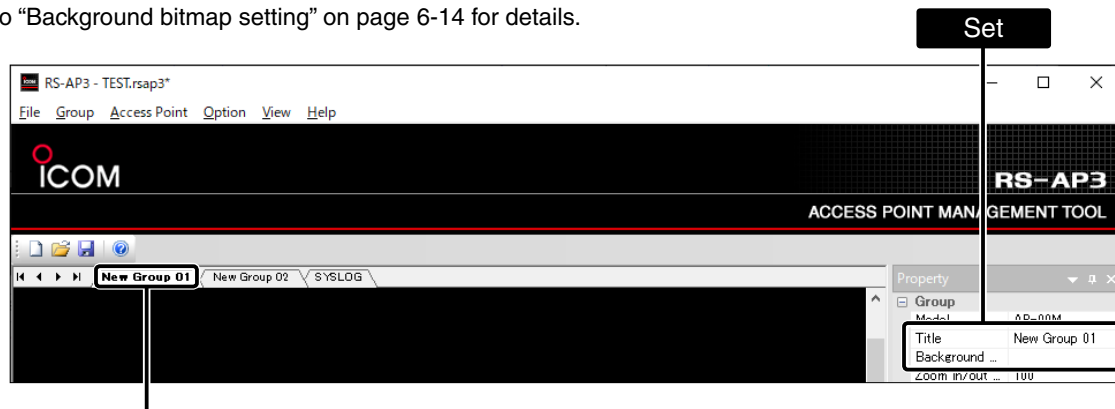

The entered title (group name) displays.

2. Group menu (Continued)

③ **Security Dashboard**................Displays the SSIDs and encryption settings for all the access points registered in the group in a list.

④ **Automatic Control** ....Displays the Automatic Control menu which configures the access points in the same group, according to the setting environment.
　　　　　　　　　　　　　 • It is activated when "Option" > "Automatic" > "Automatic Control" > "Automatic Control" is selected.
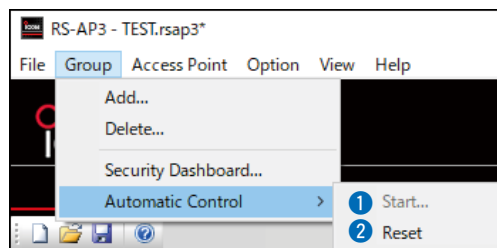
❶ **Start...** ....According to the scan results, the power level and the channel that applies with the system enviroment are set to the access point.
　　　　　　　　　　　　　 To adjust the neighbor access point's power level that has a disability, you need to activate the Automatic Control beforehand.
　　　　　　　　　　　　　 • If adjustment has been modified, "(Auto)" displays in the power level, channel, or access point status field (☞p.2-6) on the "Status" screen (☞p.3-19).
　　　　　　　　　　　　　 • "Use Common Configuration" is selected in Wireless LAN in the Individual Configurations, and the access points with their transparent display names on the map screen are subjected.
　　　　　　　　　　　　　 • Before starting the Automatic Control, start managing all the access points in the group.

❷ **Reset** ....Returns the access point's power level and channel modified by the Automatic Control to the "Individual Configuration" or "Common Configuration" screen contents.

3 MENU

3. Access Point menu

The Access Point menu is used to add, delete, start or end the management of the access point, and to update the firmware, detect illegal access and display the status, and so on.
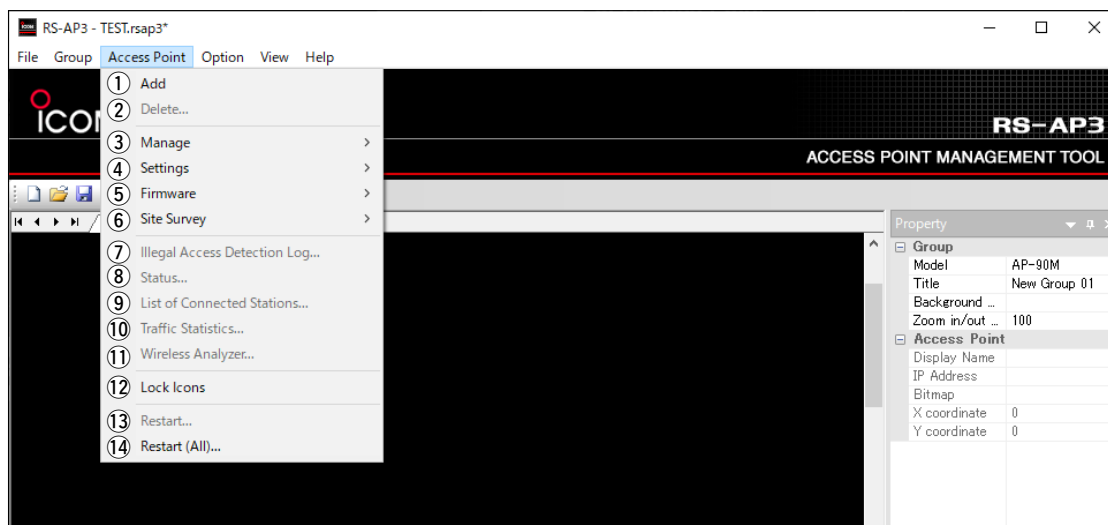• To manage access points one by one, select the access point on the map screen first, and then start the management.
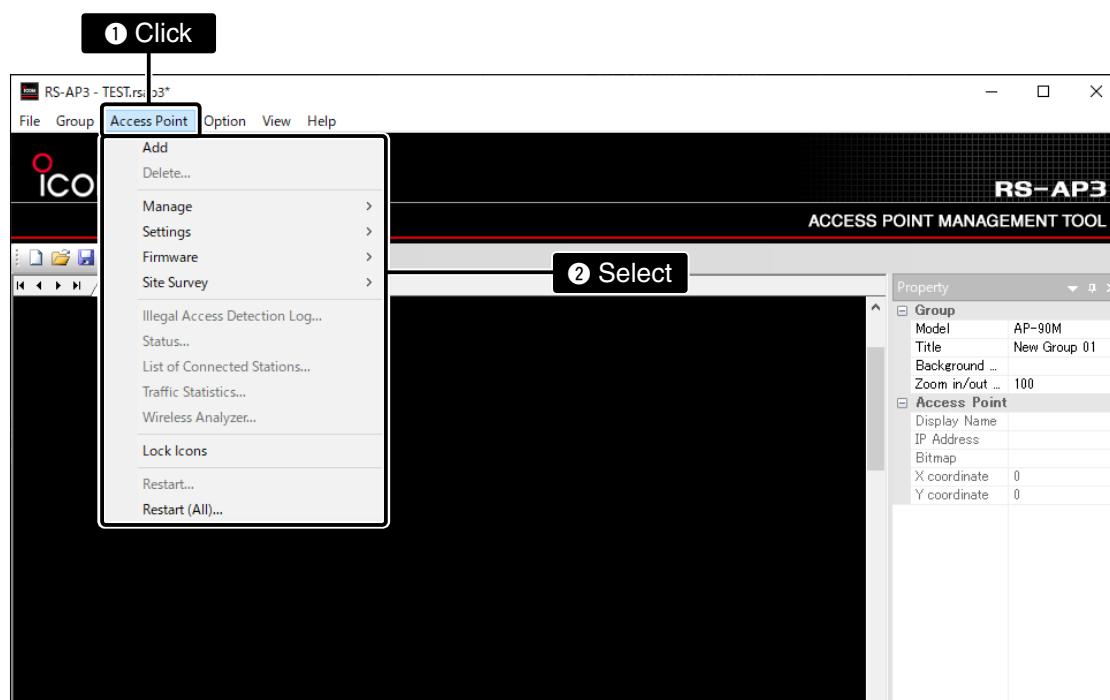

Selecting by right-clicking the wireless access point icon
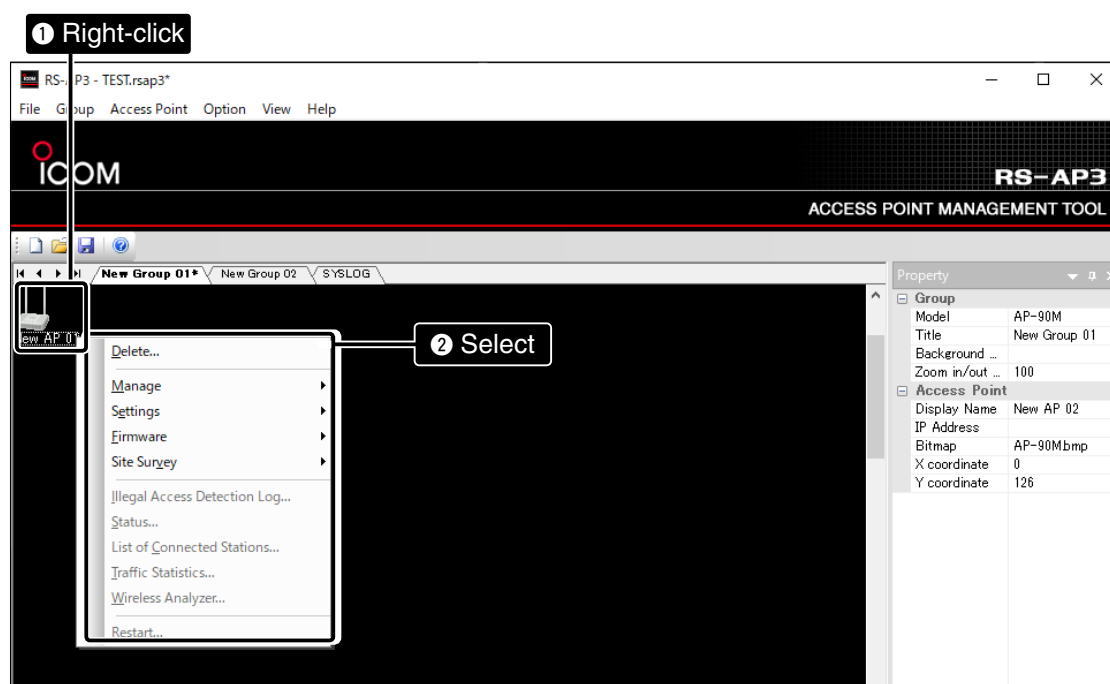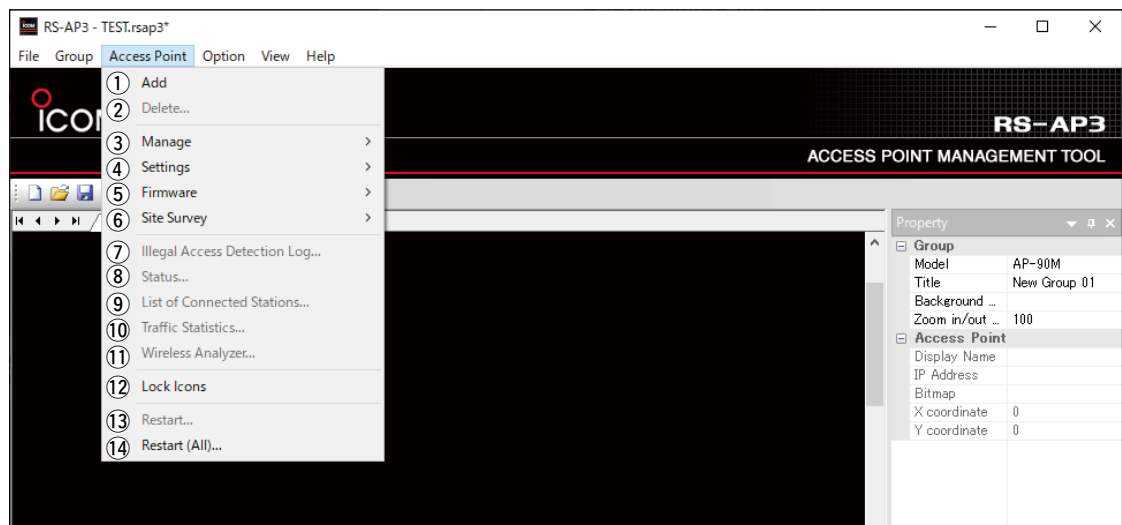
3. Access Point menu (Continued)

① **Add**..Adds an access point.
Select the added access point, and then enter the IP address.
- The access point without its IP address entered on the "Property" screen cannot be managed with the RS-AP3.
- When the number of the access points has reached the maximum, this option is greyed out.

② **Delete...** ....Deletes the selected access point.
- After deleting, confirm that the group is successfully deleted.
- A currently managing access point cannot be set on the access point's setting screen.
  If you have deleted by mistake, add an access point and set it again.

③ **Manage** ....Displays the access point management menu.
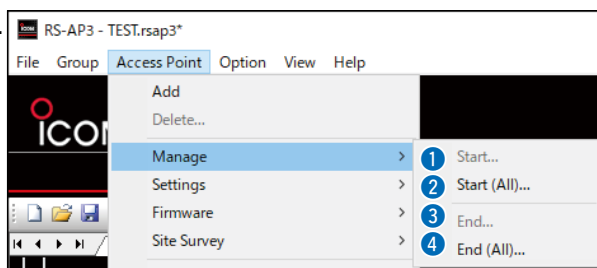- The access point without its IP address entered on the "Property" screen cannot be managed with the RS-AP3.
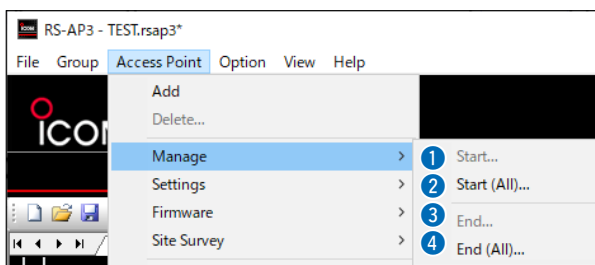
3 MENU

## 3. Access Point menu (Continued)

③ **Manage (Continued)** ....

❶ **Start...** ....Starts managing the selected access point.
  • Access points' settings cannot be modified on the access point's setting screen until the management is finished.

❷ **Start (All)...** ....Starts managing all the access points in the group.
  • If there are multiple groups to manage, start managing group by group.

❸ **End...**...Ends managing the selected access points.

❹ **End (All)...**................................Ends managing the access points in the selected group.
  • If there are multiple groups to manage, end managing group by group.

NOTE:
To start the access point management, you must "Enable" the "Access Point Management Tools."
When you finish the access point management, the management tool settings on the access points automatically return to "Disable."

3. Access Point menu (Continued)
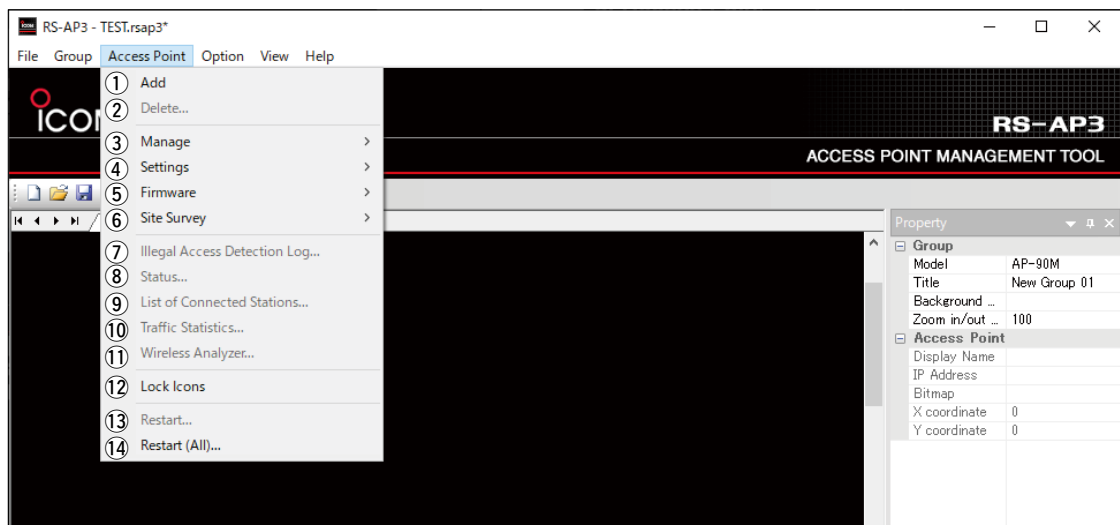
④**Settings** .... Displays the menu to export or import setting data to the managing access points.
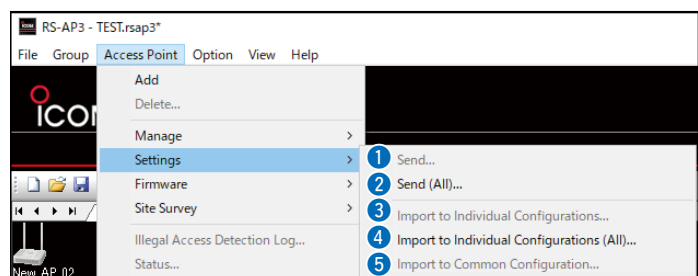
❶**Send...** .... Sends the setting data modified on the "Individual Configurations" screen or "Common Configuration" screen to the selected access point. (☞p.4-1, p.5-1)

❷**Send (All)...** .... Sends the setting data modified on the "Individual Configurations" screen or "Common Configuration" screen to the access points in the selected group. (☞p.4-1, p.5-1)

❸**Import to Individual Configurations...** .... Imports the setting data on the "Individual Configurations" screen from the selected acess point. (☞p.4-1)

❹**Import to Individual Configurations (All)...** .... Imports the setting data on the "Individual Configurations" screen from the acess points in the selected group. (☞p4-1)

❺**Import to Common Configuration...** .... Imports the setting data on the "Common Configuration" screen from the selected acess point. (☞p.5-1)

3. Access Point menu (Continued)
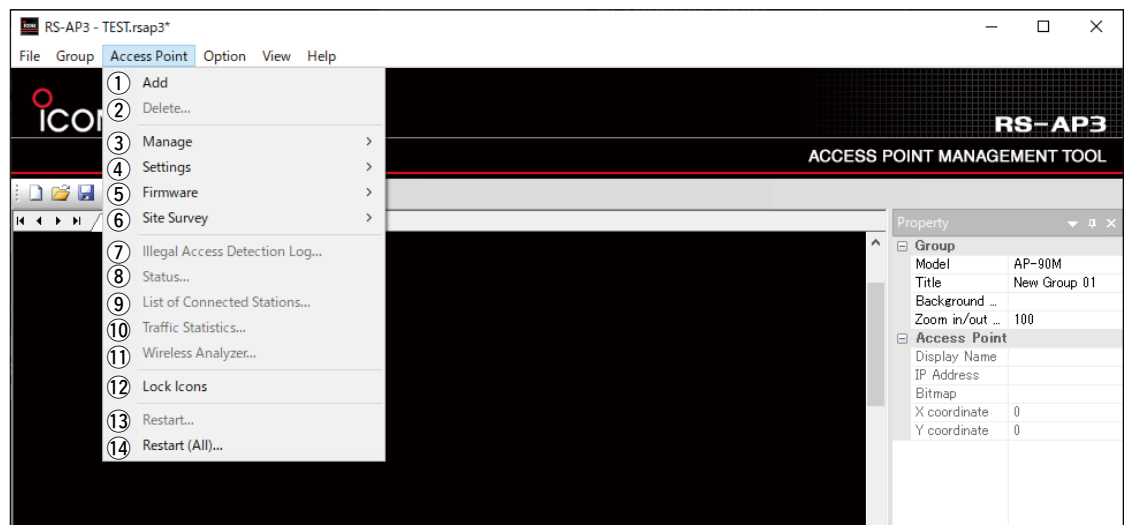
⑤**Firmware** ....Displays the menu to update the access point firmware.
• If the AP-90M's firmware does not match the RS-AP3's firmware, the access point's firmware automatically updates. (When "Option" > "Automatic" > "Firmware Update" is selected) (☞p.3-24)
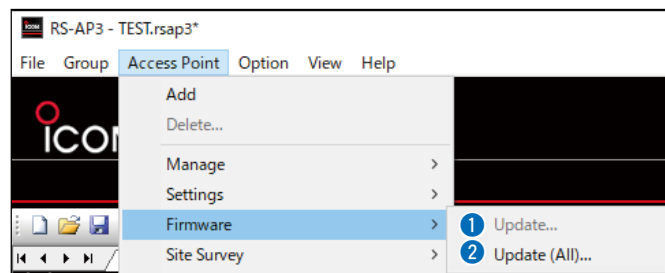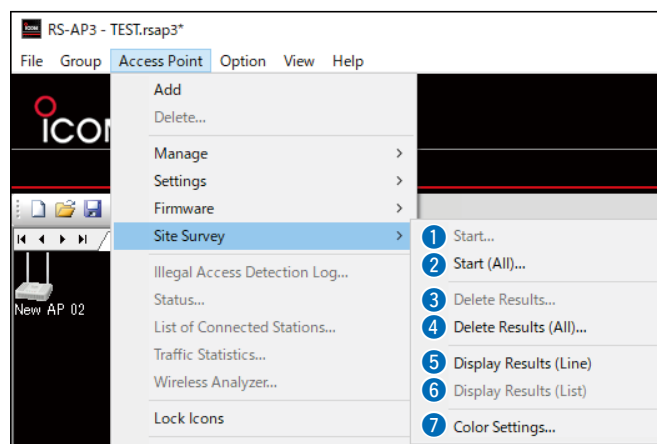

❶**Update...** ....Updates the selected access point to the RS-AP3's firmware.

❷**Update (All)...** ....Updates the access points in the selected group to the RS-AP3's firmware.

3. Access Point menu (Continued)
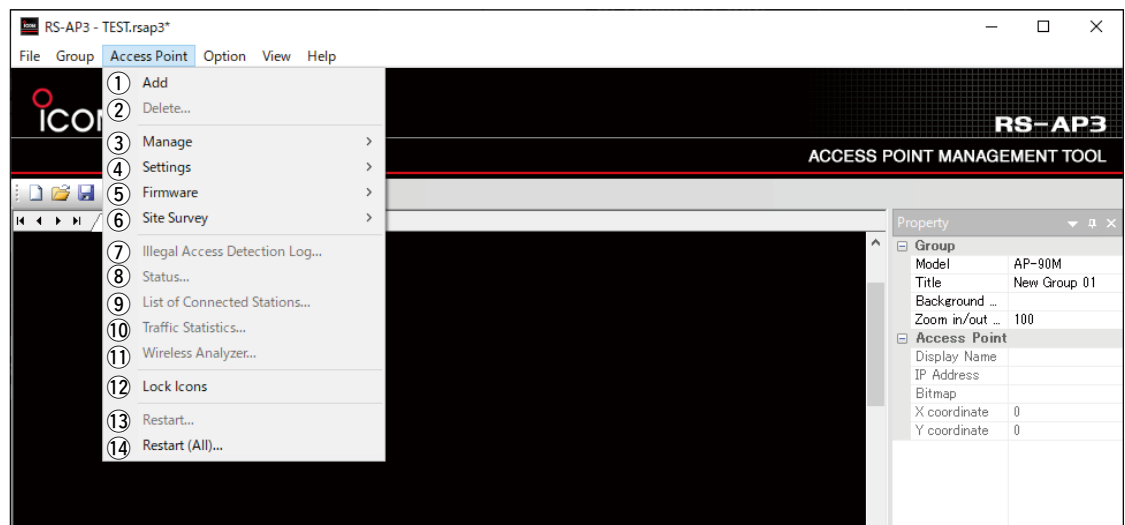
⑥ **Site Survey** .... Displays the Site Survey menu.
  • The access point cannot communicate with the wireless LAN terminal during a site survey.

❶ **Start...** .... Starts a site survey for the selected access point.

❷ **Start (All)...** .... Starts a site survey for the access points in the selected group.

❸ **Delete Results...** .... Deletes a selected access point's site survey results.

❹ **Delete Results (All)...** .... Deletes a site survey results of the access points in the selected group.

3. Access Point menu (Continued)
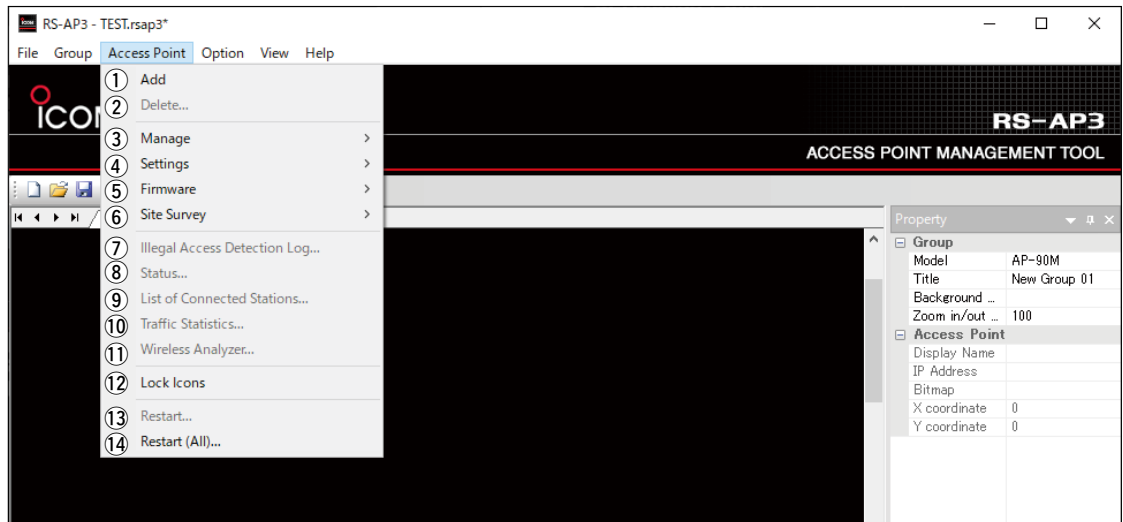
⑥**Site Survey (Continued)**.........
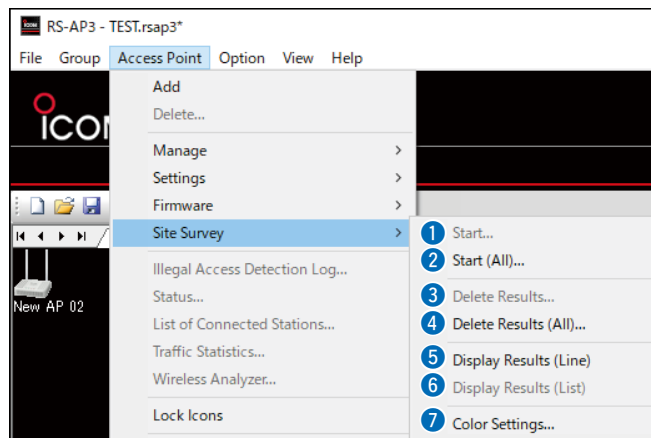
❺**Display Results (Line)**............Draws the site survey results in lines.
- The purple lines (☞p.3-16) stand for the channel (frequency) used for commu‐nication, and the line type stands for the strength of the signal.
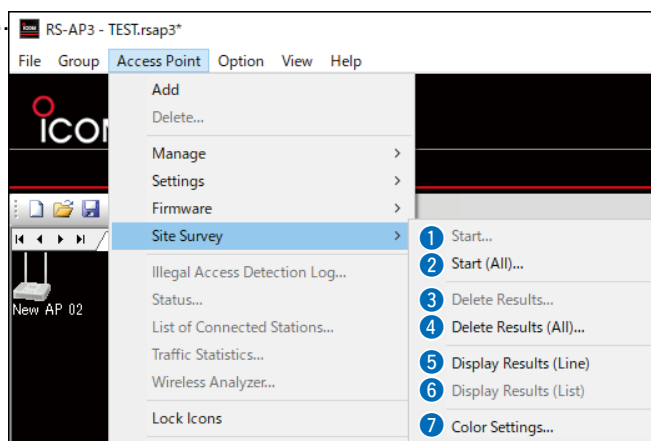- The directions of the arrow indicate the signal's direction.
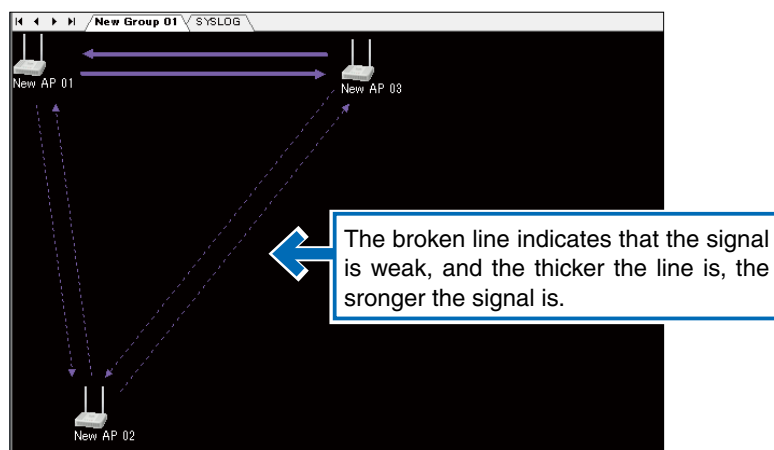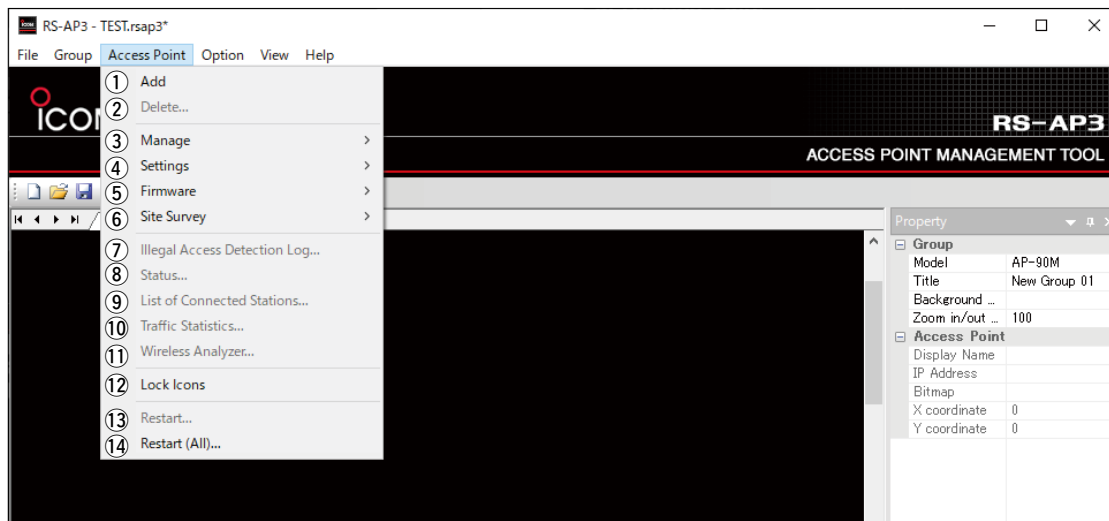
The broken line indicates that the signal is weak, and the thicker the line is, the sronger the signal is.

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3 MENU

3. Access Point menu (Continued)

⑥ **Site Survey (Continued)**.........

❺ **Display Results (Line)**
   (Continued) .... After the site survey, clicking the access point icon while pushing [Shift] will display only the indicating line of the access point's transmitting signal strength.
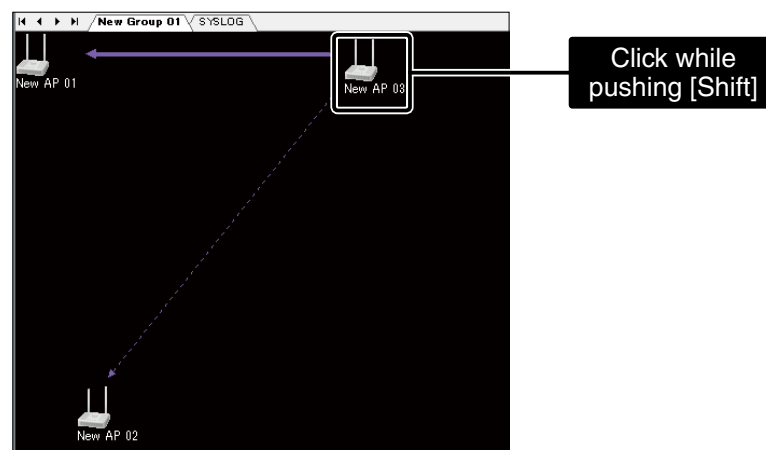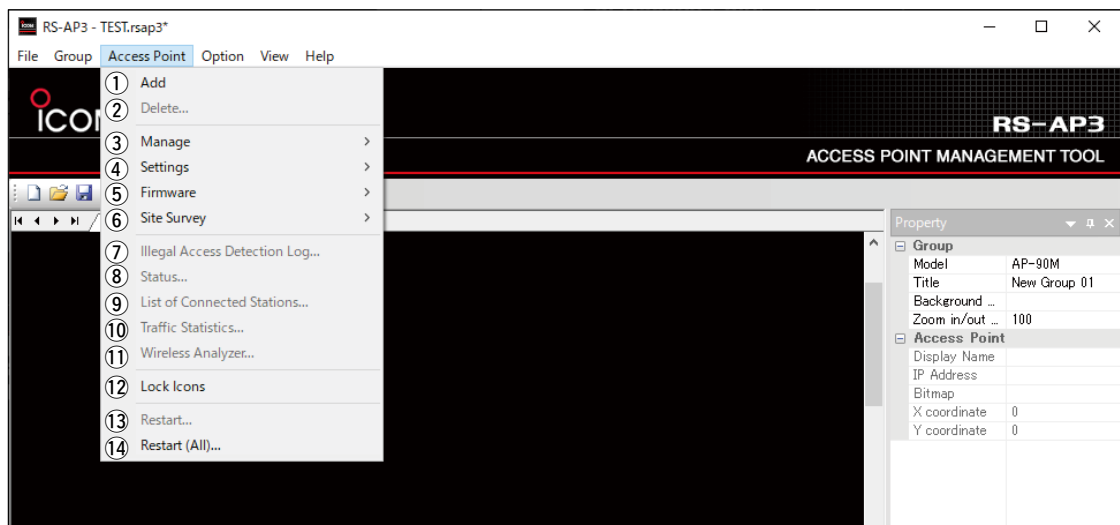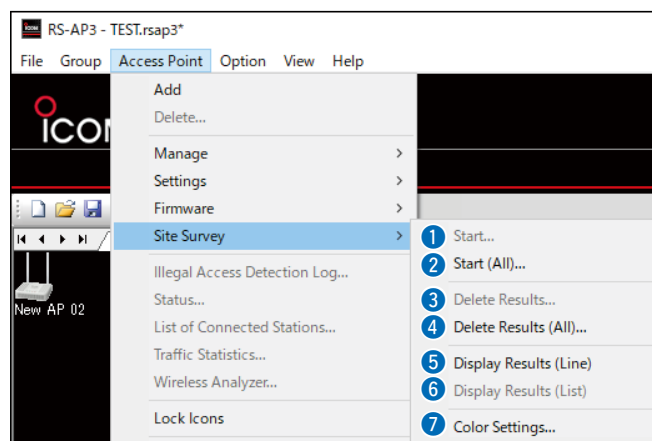

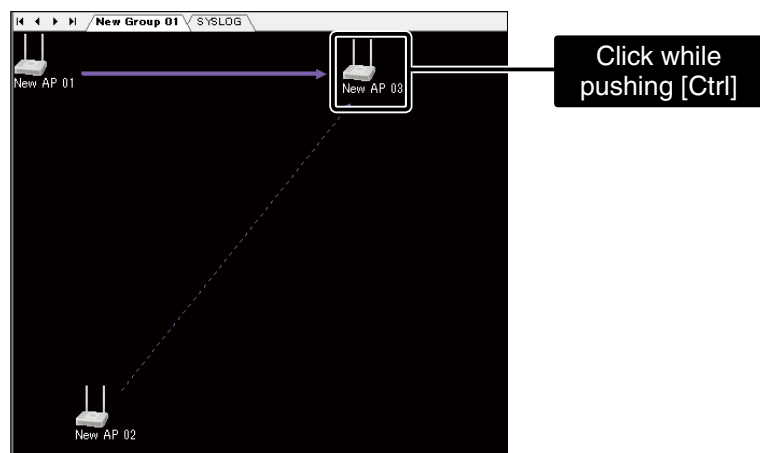Click while pushing [Shift]

3. Access Point menu (Continued)

⑥ **Site Survey (Continued)**.........

❺ **Display Results (Line)**
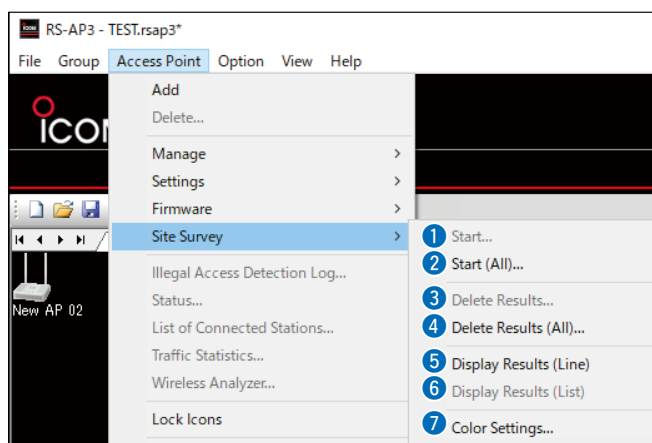　 **(Continued)** ....After the site survey, clicking the access point icon while pushing [Ctrl] will display the indicating line of the access point's receiving signal strength.

Click while pushing [Ctrl]

3. Access Point menu (Continued)
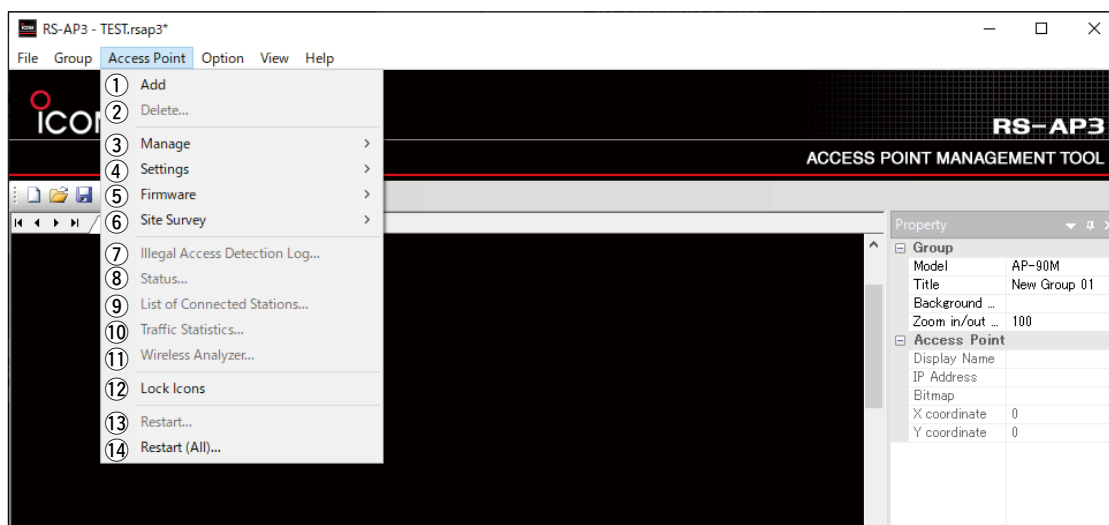
⑥**Site Survey (Continued)**.........

⑥ **Display Results (List)**.............Displays the site survey results in a list.


| BSSID	The detected device's "BSSID."
Channel	The detected device's channel.
RSSI	The strength of the received signal detected from the device. • Higher values indicate stronger signals.
Mode	If the detected device is a wireless access point, "AP" appears, and if it is a wireless LAN terminal operated in the ad hoc mode, "ADHOC" appears.
Security	Displays the encryption and authentication protocols that the detected device uses to communicate. • When the system is "WEP RC4" or "OCB AES," "WEP" is displayed.
SSID	The detected device's "SSID."

3. Access Point menu (Continued)
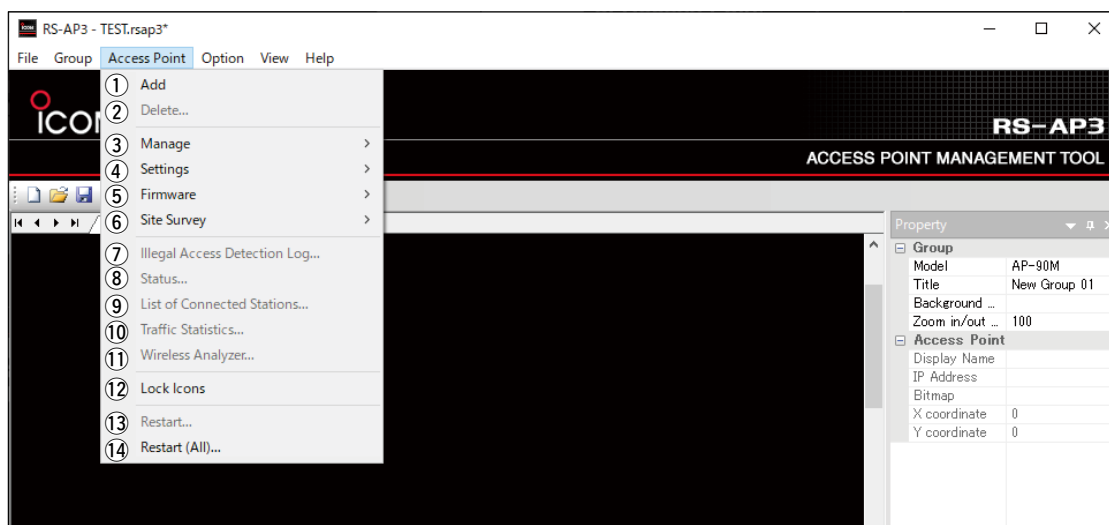
⑥ **Site Survey (Continued)**.........
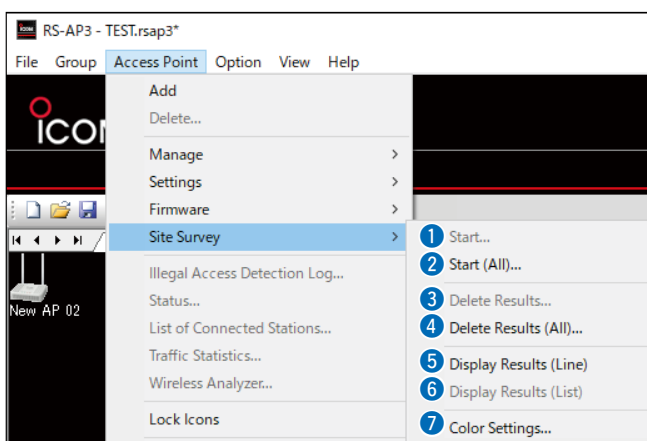
⑦ **Color Settings...**.....................Sets the display color of the frequencies used in the "Display Results (Line)."
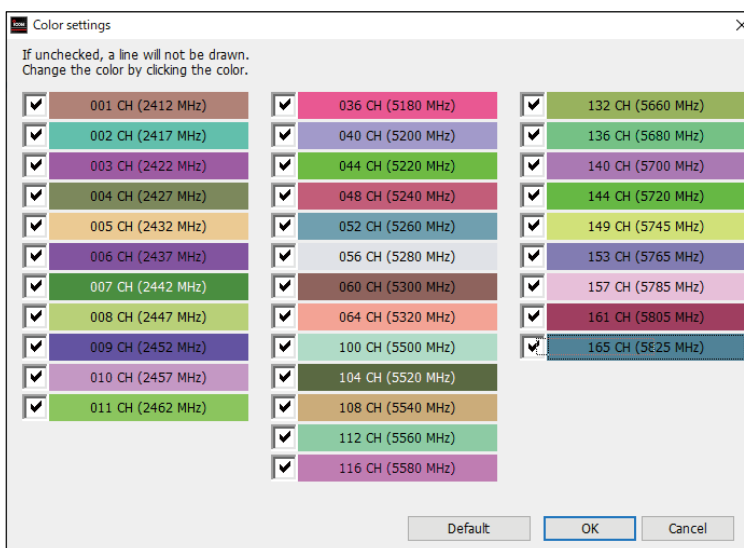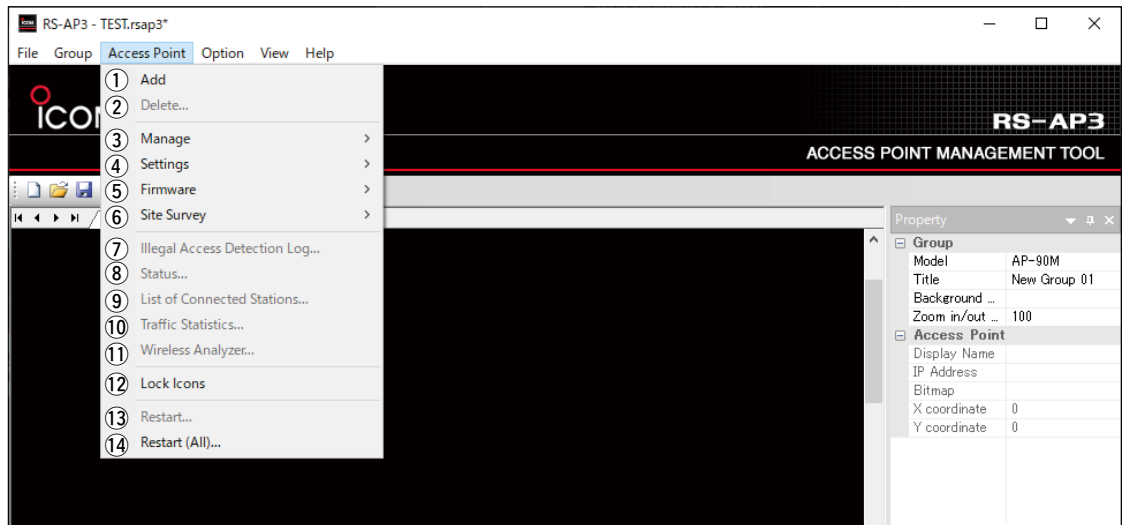

"Color Settings" window
Place check mark to display the frequency in a specified color line.
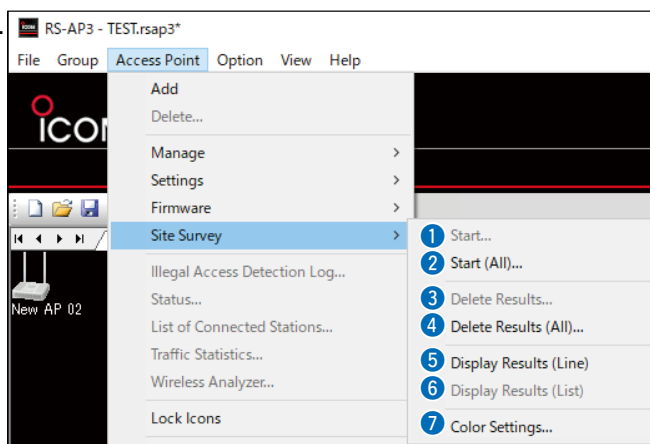If a check mark is removed, the frequency is not displayed in a color line.

(Default: [✔] displayed)

3. Access Point menu (Continued)

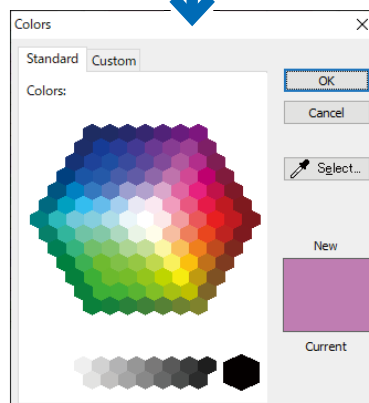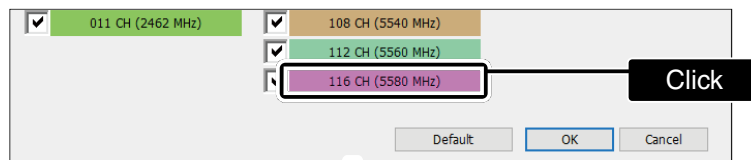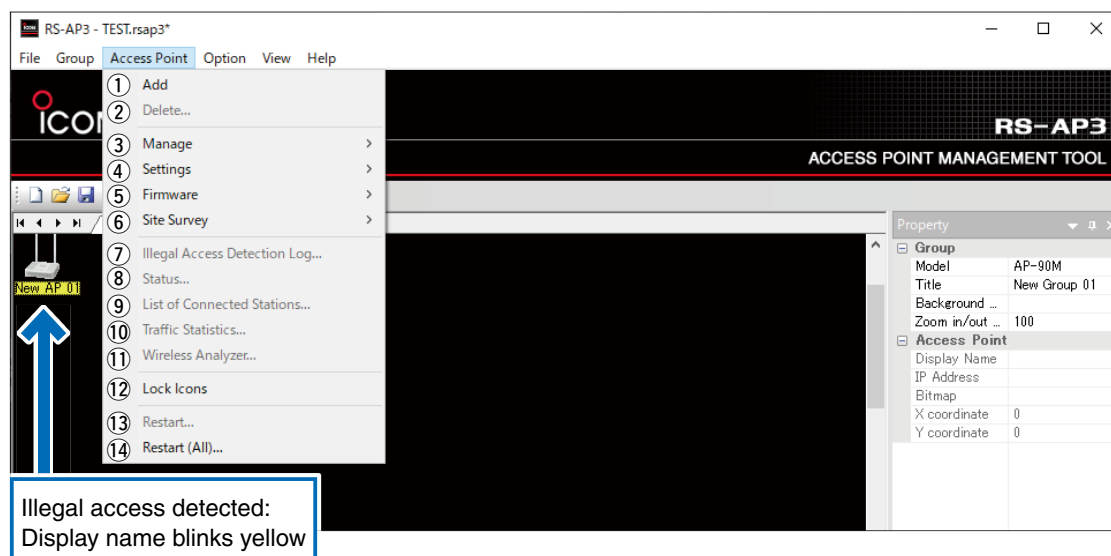⑥ **Site Survey (Continued)**.........

❼ **Color Settings...(Continued)** .. **"Colors" window**

Click a color in the "Color Settings" window to display the "Colors" window, and then change the color.

• Clicking [Default] resets to the default color.

3. Access Point menu (Continued)

Illegal access detected:
Display name blinks yellow

⑦ **Illegal Access**
Detection Log... .... When an illegal access has been detected, the display name of the
subject access point blinks in yellow.
Select the blinking access point, and then click "Illegal Access Detection
Log..." to stop the blinking and to display the "Illegal Access Detection Log"
screen.

• To save the illegal access point log, place a check mark in "Illegal Access De-
tection Log."
(Option > Save Log > Illegal Access Detection Log)
• The RS-AP3 detects an illegal access when:
➥ The connection is rejected by the MAC address filtering system.
➥ The connection is rejected by exceeding the maximum number of stations.
➥ A station is disconnected by a MIC failure (replay protection) in the WPA
authentication.

3. Access Point menu (Continued)
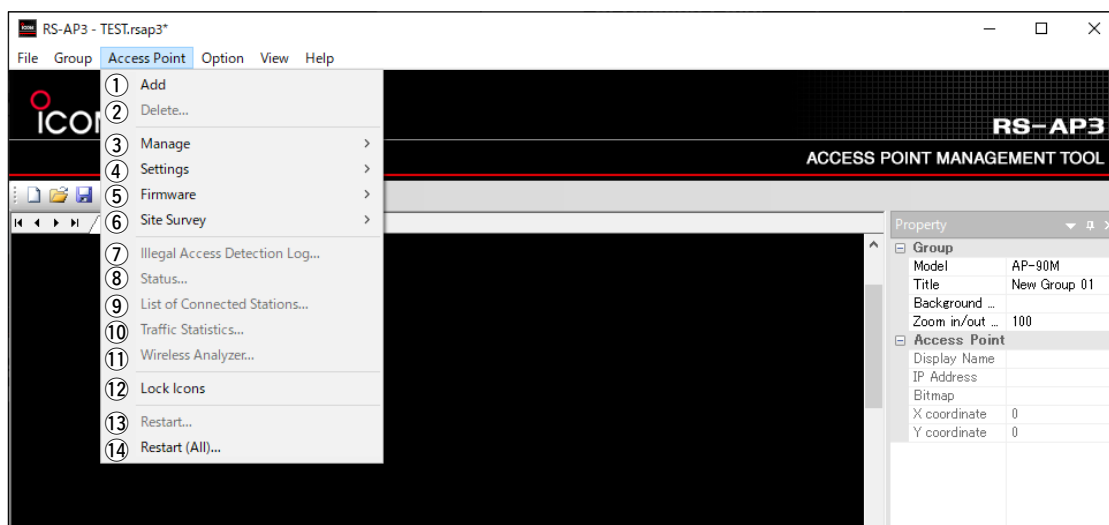
⑧**Status...** ....Displays the contents (IP address, channel, BSSID and so on) of the selected access point being managed on the "Status" screen.

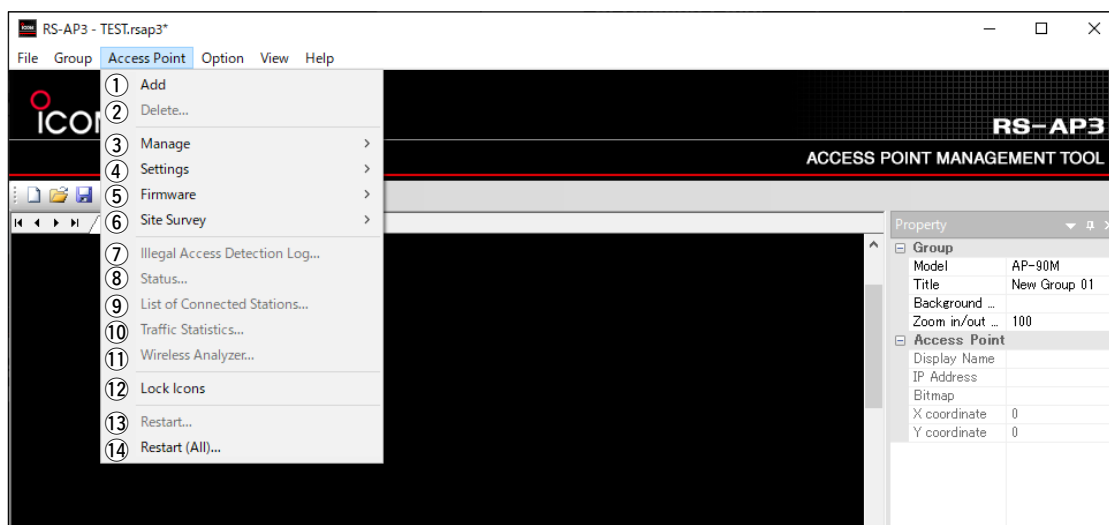## 3. Access Point menu (Continued)
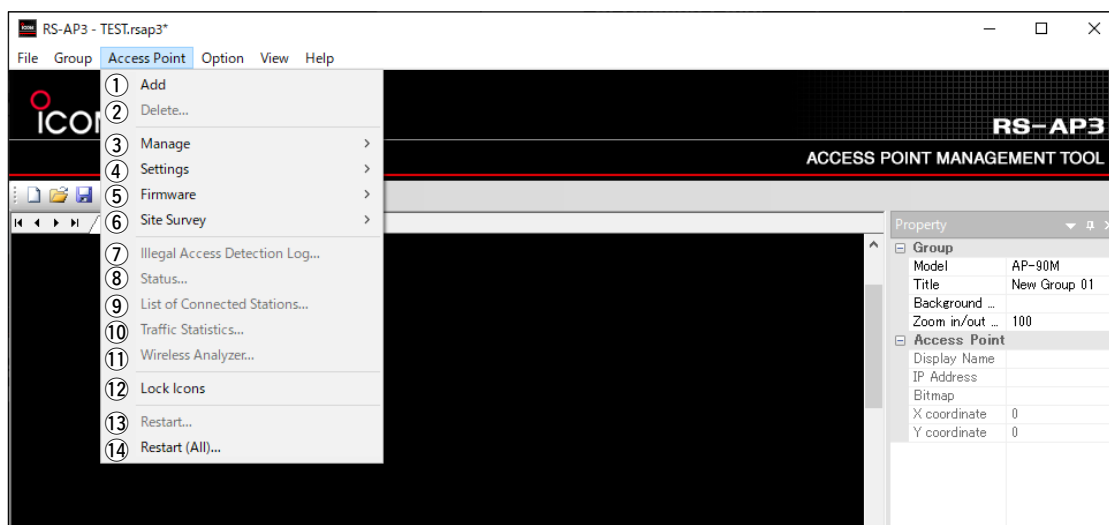
⑨ **List of Connected
   Stations...** .... Displays the information of the wireless LAN terminals communicating
   with the selected access point (MAC Address, RSSI, Tx Rate and so on)
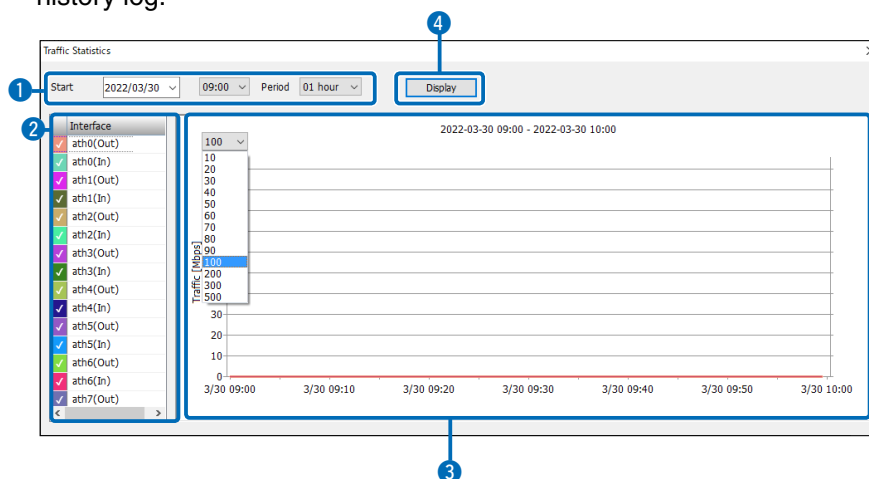   on the "List of Connected Stations" screen.

3. Access Point menu (Continued)

⑩ **Traffic Statistics...**.....................Displays the communication traffic statistics in a graph by searching the history log.

❶ **Start date/time/period** ....Sets the starting date, time and period of the search.
    Date: Directly enter or click [▾] to select from the calendar.
    Time: Select between 00:00 and 23:00 (1 hour step.)
    Period: Select between 1, 3, 6, 12 and 24 (hour.)

❷ **Interface** ....Displays the interface names and their colors.
    When an interface is selected, the subject graph will display in bold lines.

❸ **Graph**.......................................Displays the traffic of each interface in the graph.
    The lines are distinguished in the colors on the interface list.

❹ **[Display]** ....Click to start searching and display on the graph.

3. Access Point menu (Continued)
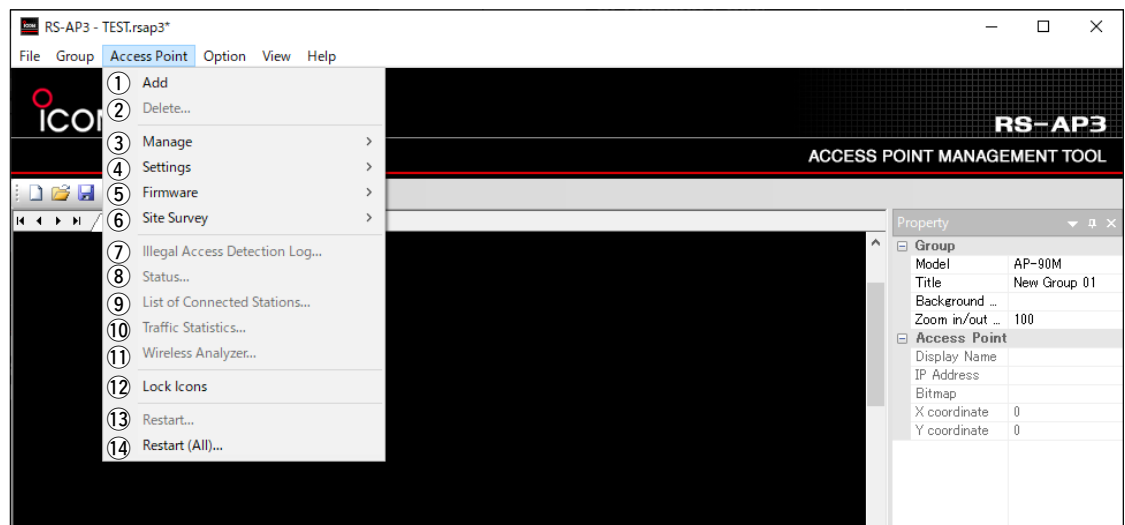
⑪ **Wireless Analyzer...**.................Displays the surrounding radio wave environment in a graph based on the data imported from the access point.
• The access points' display names without colors on the map screen are the analyzing targets.
• While analyzing, the analyzing access point cannot communicate with a wireless LAN terminal.

Radio wave intensity color bar
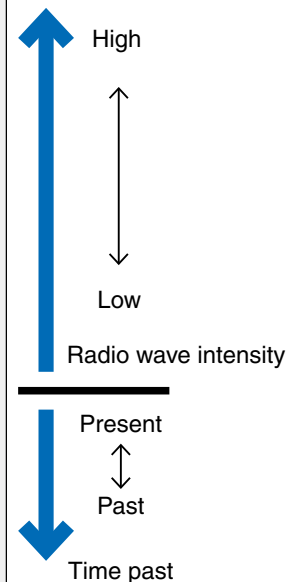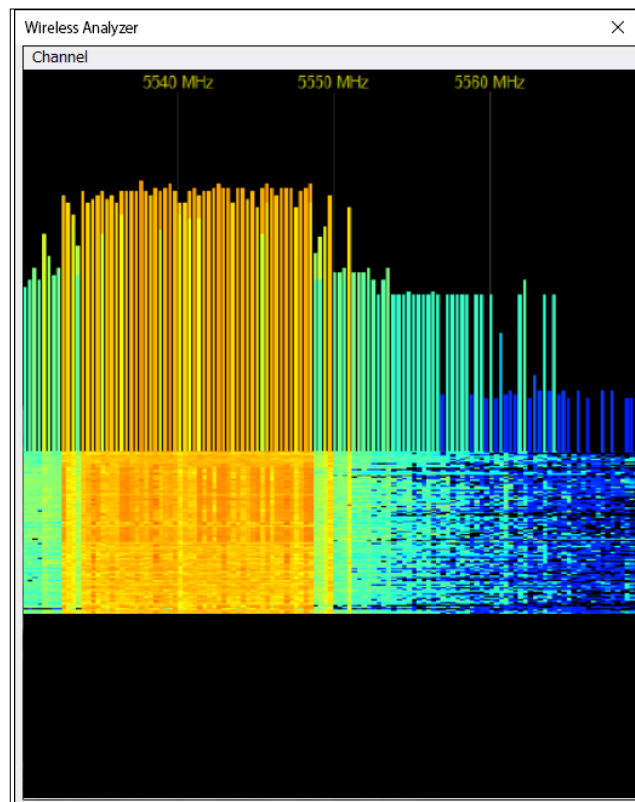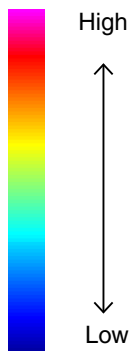
Horizontal axis: Frequency
Vertical axis: Signal strength

3. Access Point menu (Continued)

⑪ **Wireless Analyzer**
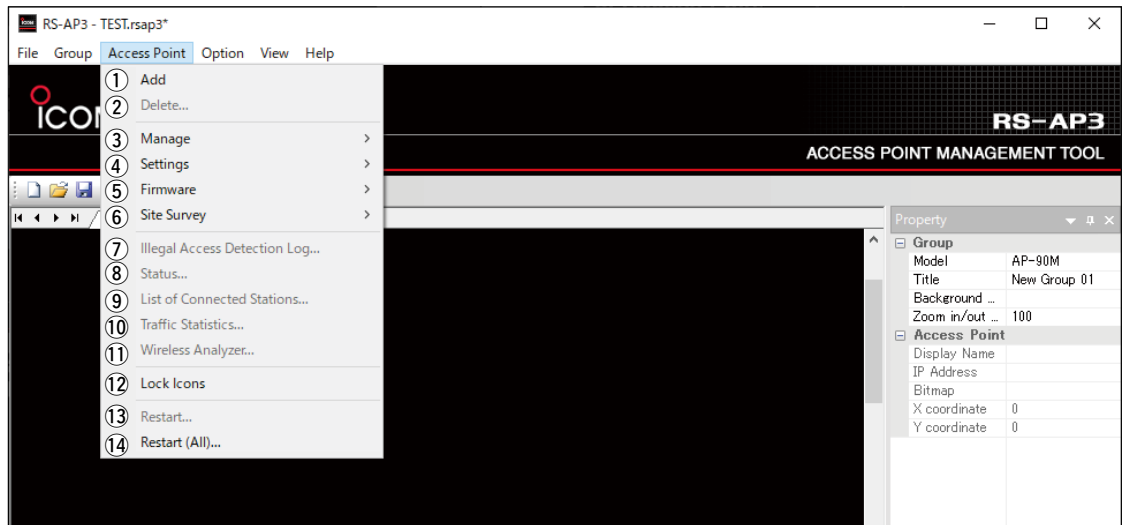   **...(Continued)** ....**Channel**
                                         Select the scanning range of channels from the displayed list.
                                                              (Default: 001-005 CH (2412-2432 MHz))
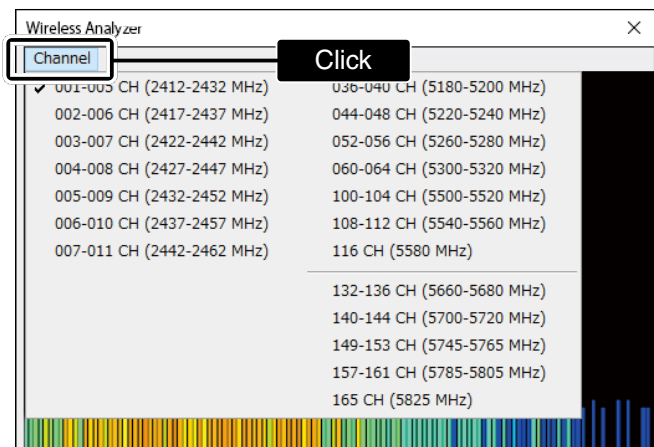
                                         • The selectable channels differ, depending on the country.

⑫ **Lock Icons**..............................You can lock the access point icons on the map screen so that they will
                                         not relocate accidentally.
                                         • To unlock, click to remove the check mark.
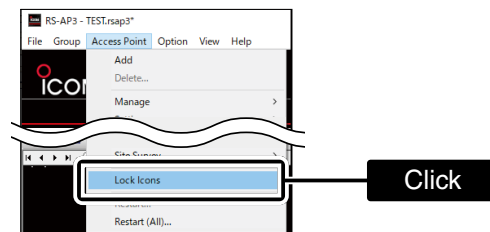
⑬ **Restart...** ....Restarts the selected access point.

⑭ **Restart (All)...** ....Restarts all the access point in the selected group.

3 MENU

4. Option menu

This menu is for automatic control, saving the log and so on.

① **Automatic** .... Displays the menu to select the automatic Firmware Update, Start Management and so on.
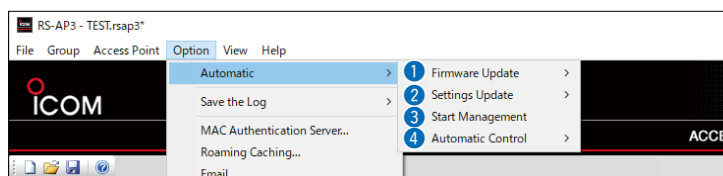
❶ **Firmware Update** .... If the firmware does not match the RS-AP3's firmware, the access point's firmware automatically updates.
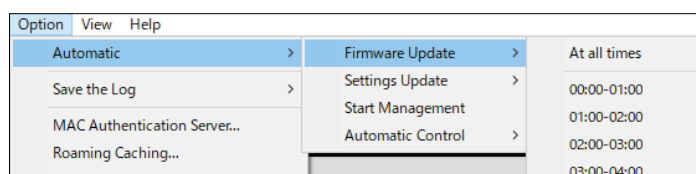
• Select to update the firmware as soon as a different version is detected by se-lecting "At all times," or assign the time to update the firmware by selecting the time.
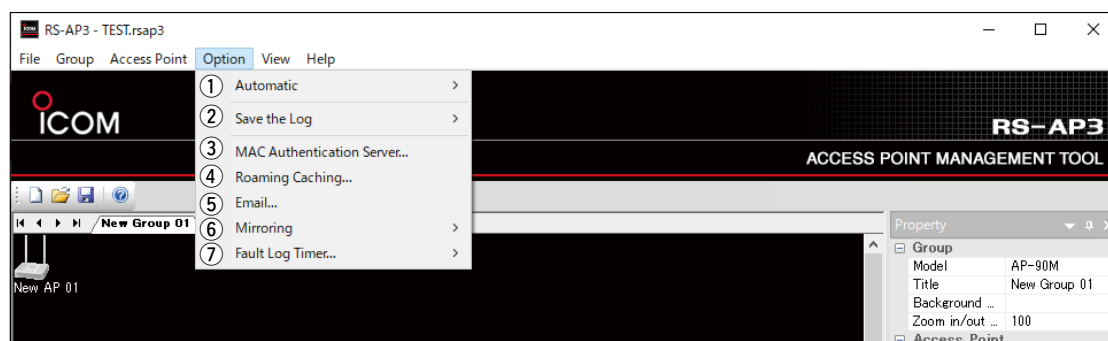 – The assigned time is synchronized with the time on your PC.
• If time is selected, a firmware update starts at the assigned time.
  – When the firmware update does not complete during the assigned time, the update is canceled.
  – After updating the firmware, the setting data does not match with the RS-AP3's data. Therefore, the setting data needs to be sent to the access point.
  (Option > Automatic > Settings Update) (☞p.3-25)
  If the firmware update and the settings update time are assigned in the same hour, the firmware is updated first, and then the setting data is updated.

4. Option menu (Continued)
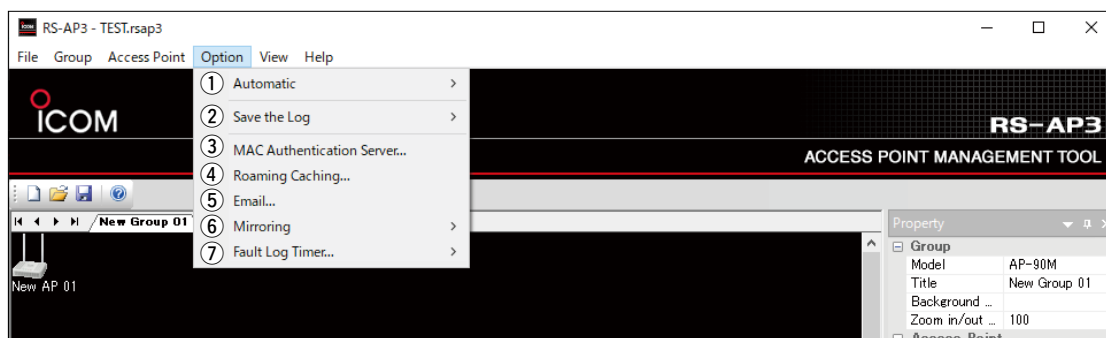
① **Automatic (continued)** ....
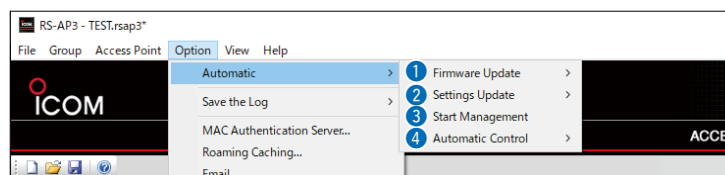
❷ **Settings Update** .... If the setting data does not match the RS-AP3's setting data, it automatically sends to the access point.
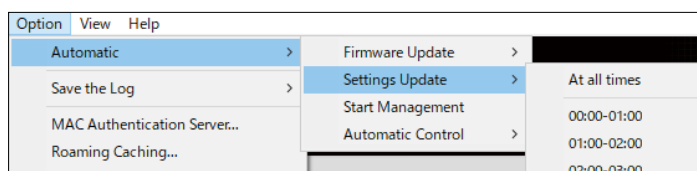
- Select to send the setting data as soon as a different data is detected by selecting "At all times," or assign the time to send by selecting the time.
  – The assigned time is synchronized with the time on your PC.
- If time is selected, the data is sent to update at the assigned time.
  – When the updating does not complete during the assigned time, the updating is canceled.
  – This function can be used with the Firmware Update function.
   (Option > Automatic > Firmware Update) (☞p.3-24)
   If the firmware update and the settings update time are assigned in the same hour, the firmware is updated first, and then the setting data is updated.

3 MENU

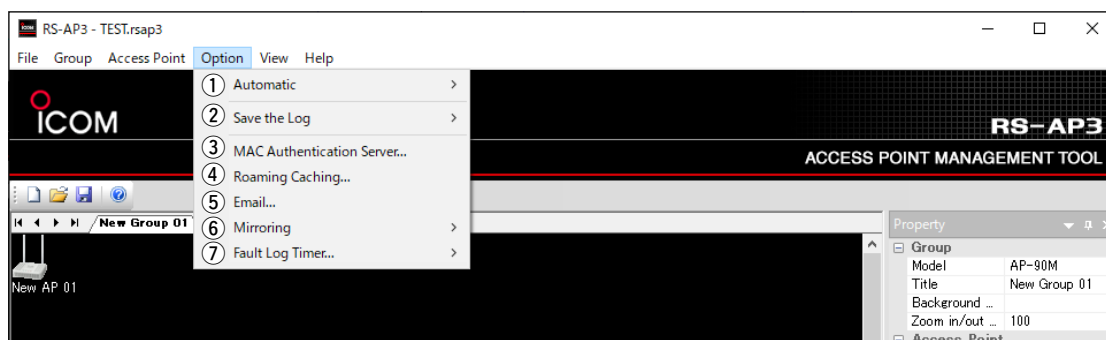## 4. Option menu (Continued)

①**Automatic (continued)** ....
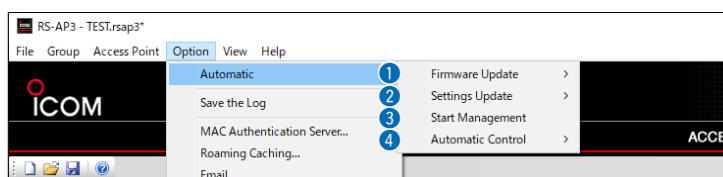
❸**Start Management** ....If an access point that is not being managed is found, this option will automatically start managing.
- "Access Point Management Tools" must be enabled, and the access point must be located and set on the map screen to start its management.

❹**Automatic Control** ....Enables or disables the Automatic Control function.
- Select the channels that can automatically be controlled in the "Channel List."
- If the function is enabled, "Automatic Control" in the "Group" menu is also enabled. (☞p.3-5)
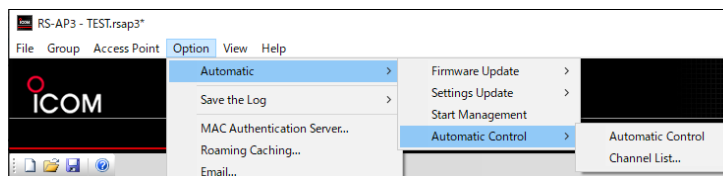
Channel List... Selects channels to be automatically controlled. Select one or more channels each from the 2.4GHz and 5GHz channels.
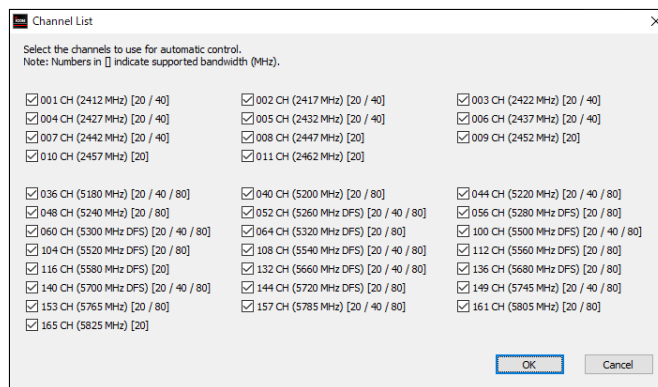
- If the selected channels do not include the supported bandwidth, the first channel which includes the supported bandwidth is automatically selected.

4. Option menu (Continued)

② **Save the Log** ....Displays the saving options for illegal access detection, SYSLOG and so on.
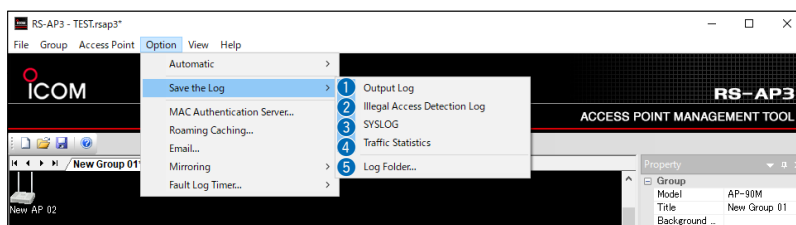
❶ **Output Log** ....Saves the information on the server or the illegal access detection log history.

❷ **Illegal Access
Detection Log** ....Saves the received illegal access detection as a log.

❸ **SYSLOG** ....Saves the received SYSLOG when using the SYSLOG server in a file
(Extension: txt).
• Depending on the capacity of the received SYSLOG or the saving speed, the
SYSLOG processing may be delayed. In that case, all the delayed SYSLOGs
are deleted and outputs a message in the log.

❹ **Traffic Statistics**.....................Saves the traffic statistics as a log.

4. Option menu (Continued)

②**Save the Log (continued)**.......
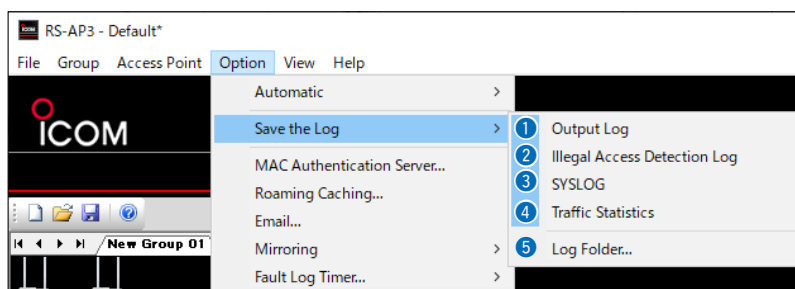
❺**Log Folder...**...........................Sets the folder to save the logs and manages the stored log.
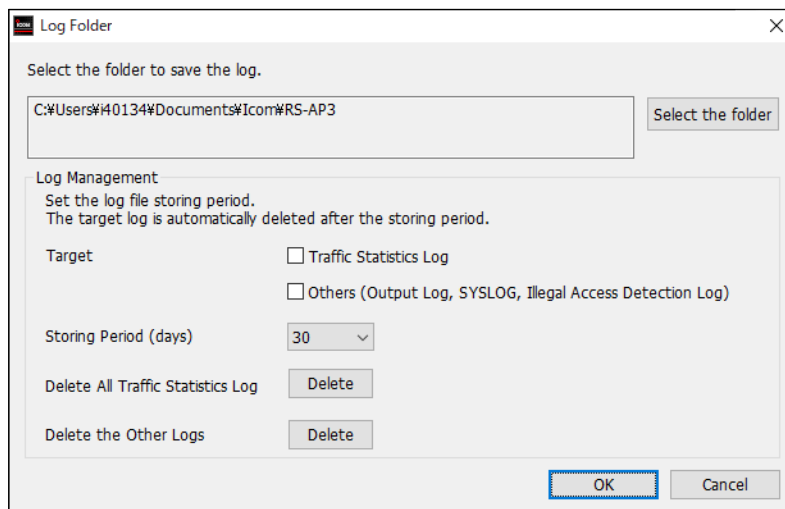
Log Management
Target: Click to check the logs to delete automatically.

Storing Period (days): Select number of days to keep the logs from "30," "60," or "90."   (Default: 30 (days))

Delete All Traffic
Statistics Log: Click <Delete>, then click <Yes> to manually delete all the traffic statistics logs except the current day, regardless of the "Storing Period (days)" setting.

Delete the Other Logs: Click <Delete>, then click <Yes> to manually delete all of the output logs, illegal access detection logs, and SYSLOG logs, except the current day, regardless of the "Storing Period (days)" setting.

4. Option menu (Continued)
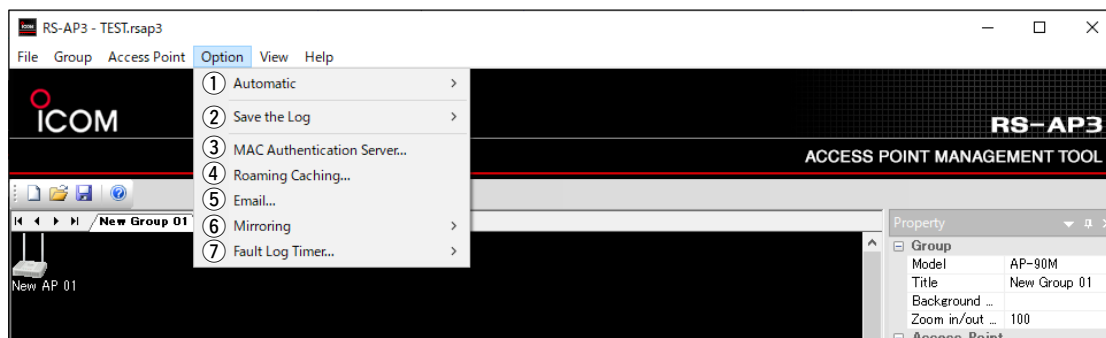
③**MAC Authentication**
 Server... ....You can register up to 10000 MAC addresses used for the MAC authen-
 tication server (RADIUS.)

• The RS-AP3's MAC Authentication Server function
 (RADIUS) cannot be used as the VLAN authentication
 server. (Attribute responder not supported)
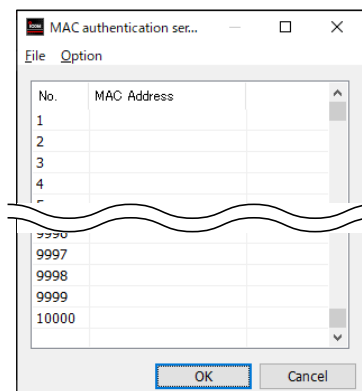
• The following setting is when the RS-AP3 MAC authentication server is enabled
 in the "MAC Authentication Server (RADIUS)" setting on the "Common Configu-
 ration" screen.
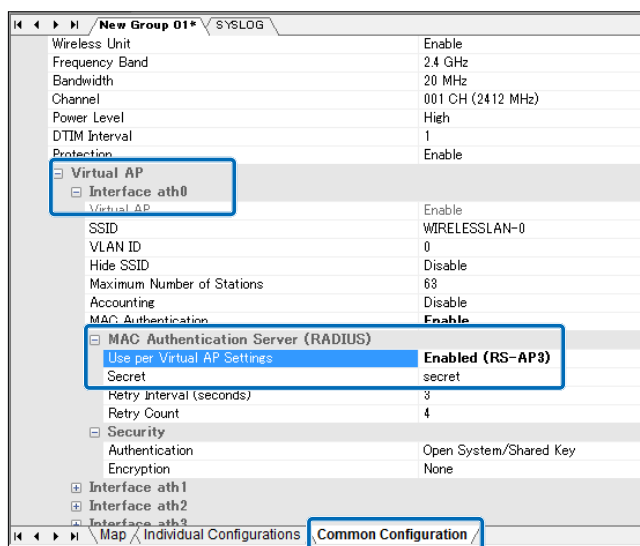
4. Option menu (Continued)

③**MAC Authentication Server...(Continued)** ....
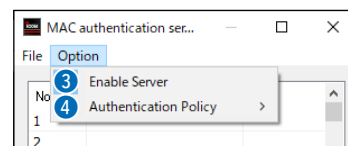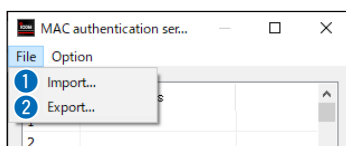
❶ **Import...** ....Imports the MAC address information (extension: txt) to the RS-AP3.
• The previously registered MAC address will be overwritten.
• You can import only the file that is exported from [Export...] (②).

❷ **Export...** ....Exports the registered MAC address information as a text file (extension: txt) to a desired location.
• The following MAC addresses are taken as identical.
 (Example: 0090C7777777 and 00-90-C7-77-77-77)

❸ **Enable Server** ....Enables the RS-AP3's MAC authentication server.
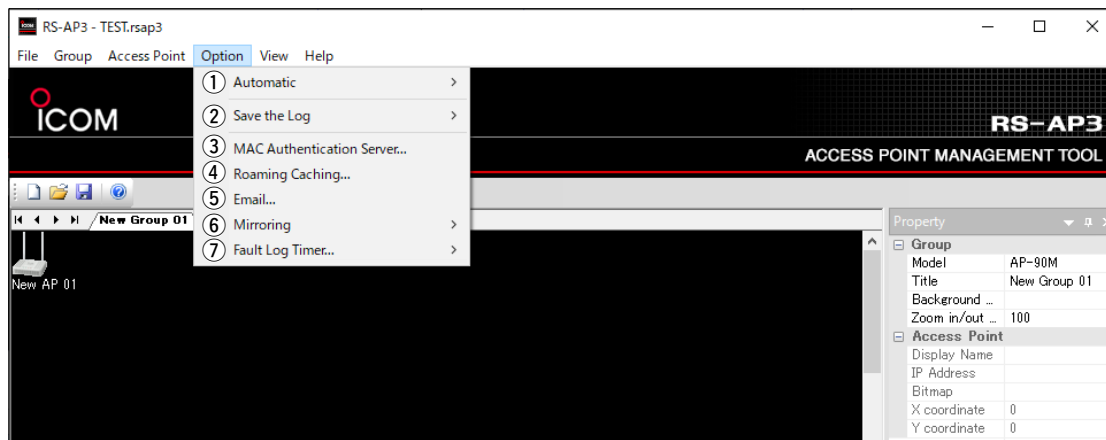
❹ **Authentication Policy** ....Selects whether or not to allow to access from a wireless LAN terminal that has its MAC address registered.   (Default: Allow List)
Allow List: Allows to access from only the registered wireless LAN terminals.
• All the terminals with MAC addresses that are not registered are denied.
Deny List: Denies to access from only the registered wireless LAN terminals.
• All the terminals with MAC addresses that are not registered are allowed.

4. Option menu (Continued)
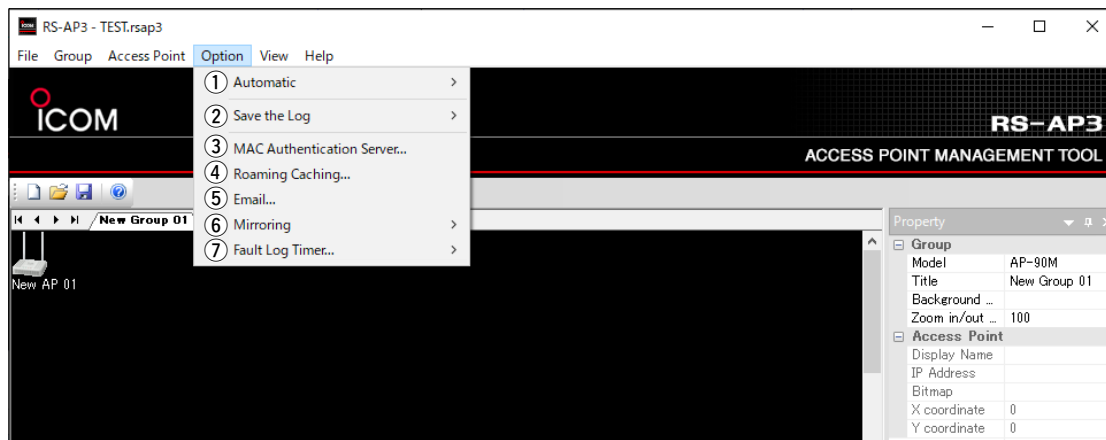
④ **Roaming Caching...** ....Enables the PMK (Pairwise Master Key) Caching function that minimizes the communication interruptions by leaving out some parts of the authentication, when the wireless LAN terminal roams to other access points.
　　　　　　　　　　　　　• The PMK Caching function can be used when "WPA2" or "WPA/WPA2" authentication is used.

RS-AP3

❹ Sends PMK Caching to the RS-AP3

❸ Authorized by the RADIUS server

❼ If you receive caching information while changing to access point B by roaming, it will not communicate withthe RADIUS server and checks for the PMK caching with the RS-AP3.

RADIUS server

Wireless access point A

❽ If there is a correct PMK Caching, skips the authentication, and enables connection.

Wireless access point B

❷ Access point A accessing the RADIUS server

❻ When accessing access point B, sends the caching information from accessing the acces point A.

❶ Accessing access point A

❺ Moving

Wireless LAN terminal

Wireless LAN terminal

NOTE
• All the PMK cachings are deleted when the setting data is saved to the RS-AP3.
• Up to 16 PMK cachings can be held in each wireless LAN.
　When the amount of the PMK cachings exceed more than 16, the older PMK cachings are deleted.
　Also, the PMK cachings that exceed the PMK Caching Timeout are deleted. (☞p.3-32)

4. Option menu (Continued)
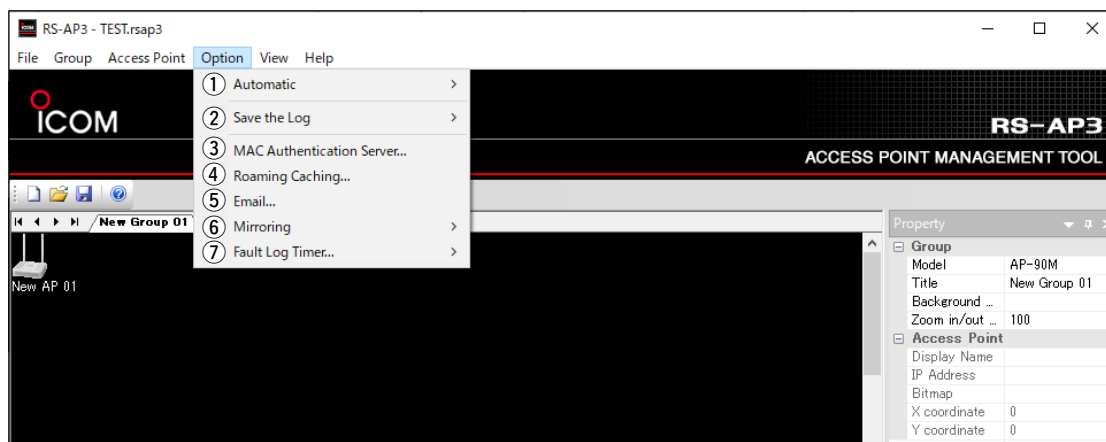
④ **Roaming Caching...**
  (Continued) ....
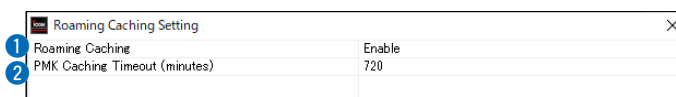
❶ **Roaming Caching** ....Enables or disables the Roaming Caching function.   (Default: Enable)

❷ **PMK Caching Timeout**
  (minutes) ....If necessary, set the timeout period until the PMK caching is automatically deleted.
  • Set the period between 1 and 1440 minutes.   (Default: 720)

PMK Caching sharing function setting (Authentication/RADIUS)
In the Wireless Settings on the "Common Configuration" screen, Set "WPA2," or "WPA/WPA2," and the RADIUS server. (As shown in the screen below)
To apply the changes, overwrite the settings, and then send the setting data to the access points. (☞p.1-18 to p.1-20)
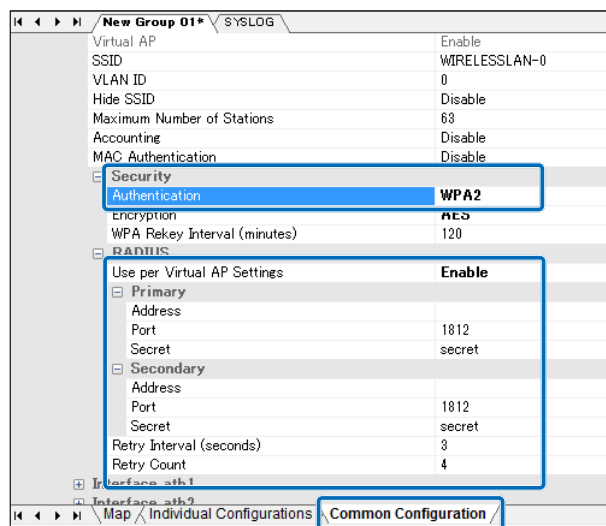
4. Option menu (Continued)

⑤ **Email...**.....................................Displays the "Email Settings" window to send access point information by email.
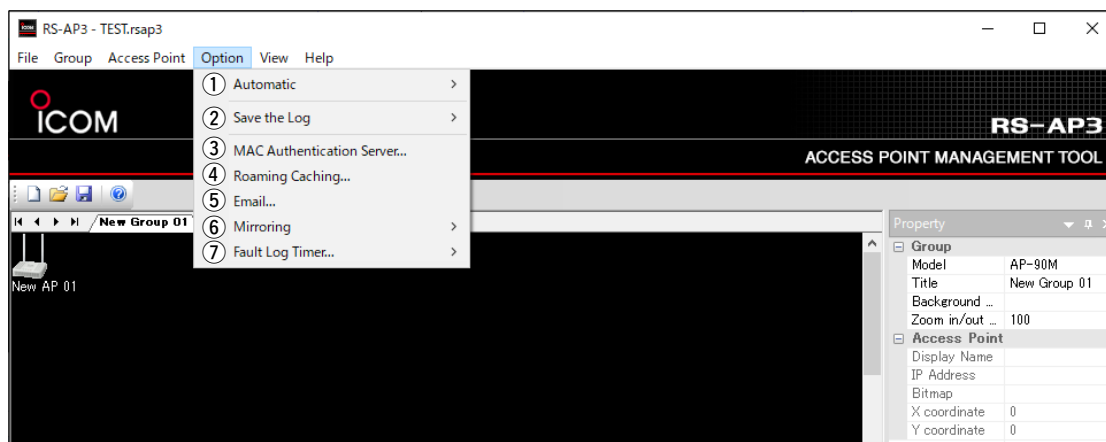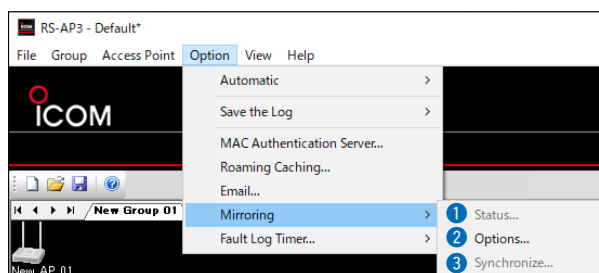   • Refer to "Notification by email function" on page 6-2 of this manual for more details.

⑥ **Mirroring...**..............................Displays the Mirroring function menu.

Having the Mirroring function enabled will avoid being disabled by interferences.
If you enable, the setting data on this PC is synchronized with another PC with the RS-AP3.
• Refer to "To prevent the management inability" on page 6-7 for the setting details.

❶ **Status...** ....Displays the "Mirroring Status" window after enabling the mirroring function to confirm the setting options that are not synchronized. (☞p.6-13)
   • Double-clicking "Synchronized" or "Unsynchronized" will also display the window.

❷ **Options...**................................Displays the "Mirroring Option" window to set the mirroring function. (☞p.6-8)

❸ **Synchronize...**.........................Displays the " Mirroring" window to synchronize the Primary and the Secondary settings after enabling the mirroring function. (☞p.6-10)

4. Option menu (Continued)
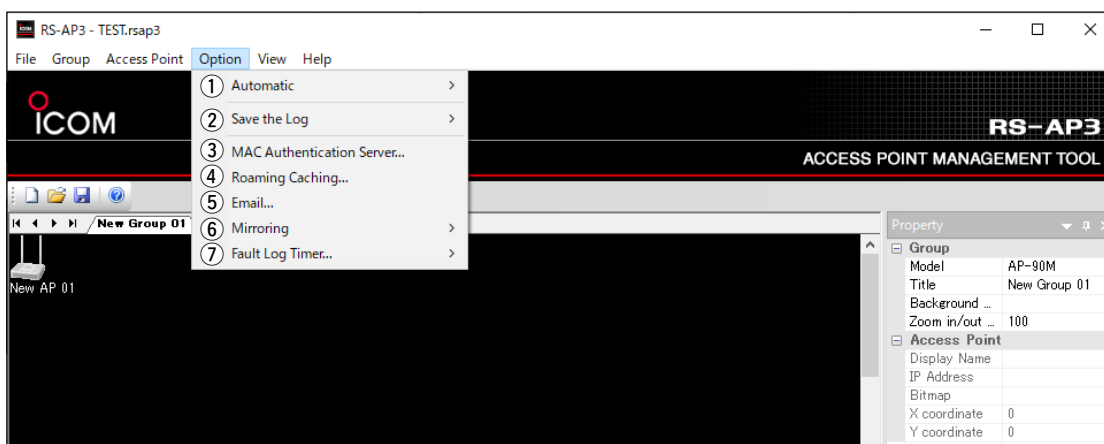
⑦ **Fault Log Timer...** .... When there is no notification from the access point for this setting time period, the access point icon blinks red, informs on the "Log Output" screen, and/or by sending a notification email, if set (☞p.6-2)
Set to between 1 and 5 minutes.
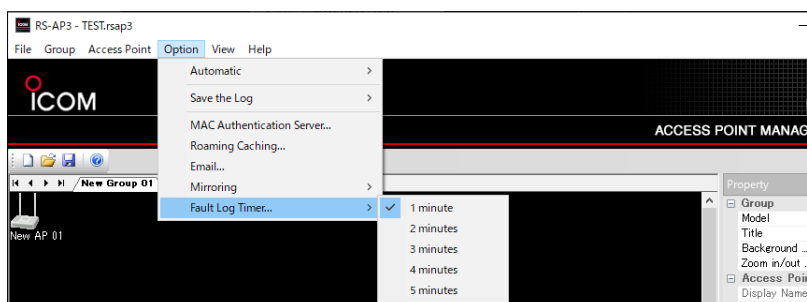
Binks red when no notification from the access point for this setting time period.

5. View menu

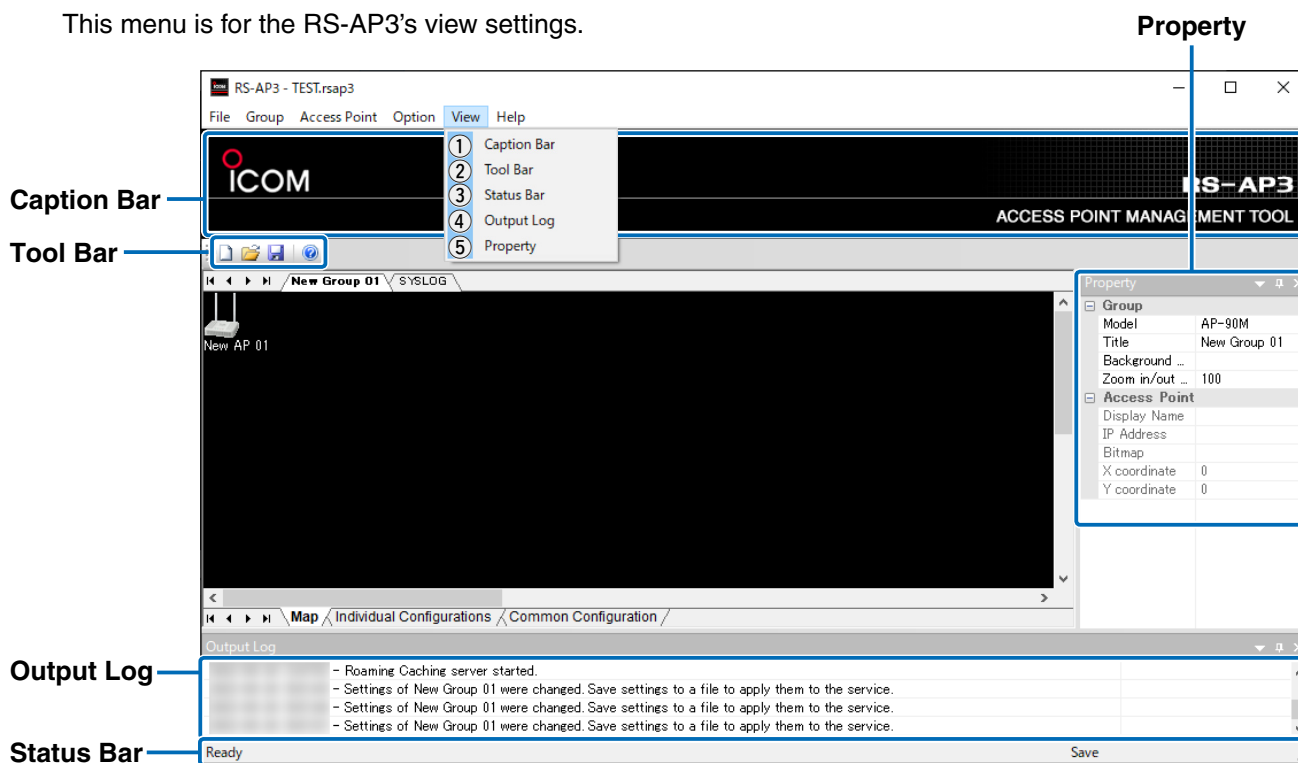This menu is for the RS-AP3's view settings.

Caption Bar — Caption Bar

Tool Bar — Tool Bar

Output Log — Output Log

Status Bar — Status Bar

Property — Property

①**Caption Bar** .... Set whether or not to display the caption bar.

②**Tool Bar** .... Set whether or not to display the tool bar.

③**Status Bar** .... Set whether or not to display the status bar.

④**Output Log** .... Set whether or not to display the "Output Log" screen.

⑤**Property** .... Set whether or not to display the "Property" screen.

3 MENU

6. Help menu

This menu displays the RS-AP3's instruction manual (this manual) and the version information.
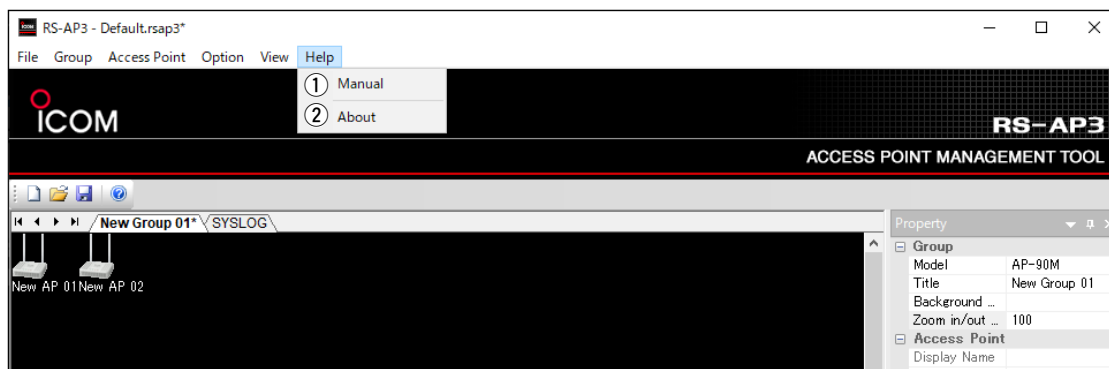
① **Manual** ....Opens this instruction manual.

② **About** ....Displays the software, version and copyright information.

INDIVIDUAL CONFIGURATIONS

4

4 INDIVIDUAL CONFIGURATIONS

1. Operating

Click the "Individual Configurations" tab to display the access points in the selected group.
Select an access point, and then change the settings. (☞p.4-3 to p.4-9)
• To apply the changes, overwrite the settings, and then send the setting data to the access points.
  (☞p.1-18 to p.1-20)

The settings on the "Property" screen can also be set on this list. (☞p.2-9)

❹ Save
❷ Select
❸ Check
❶ Click
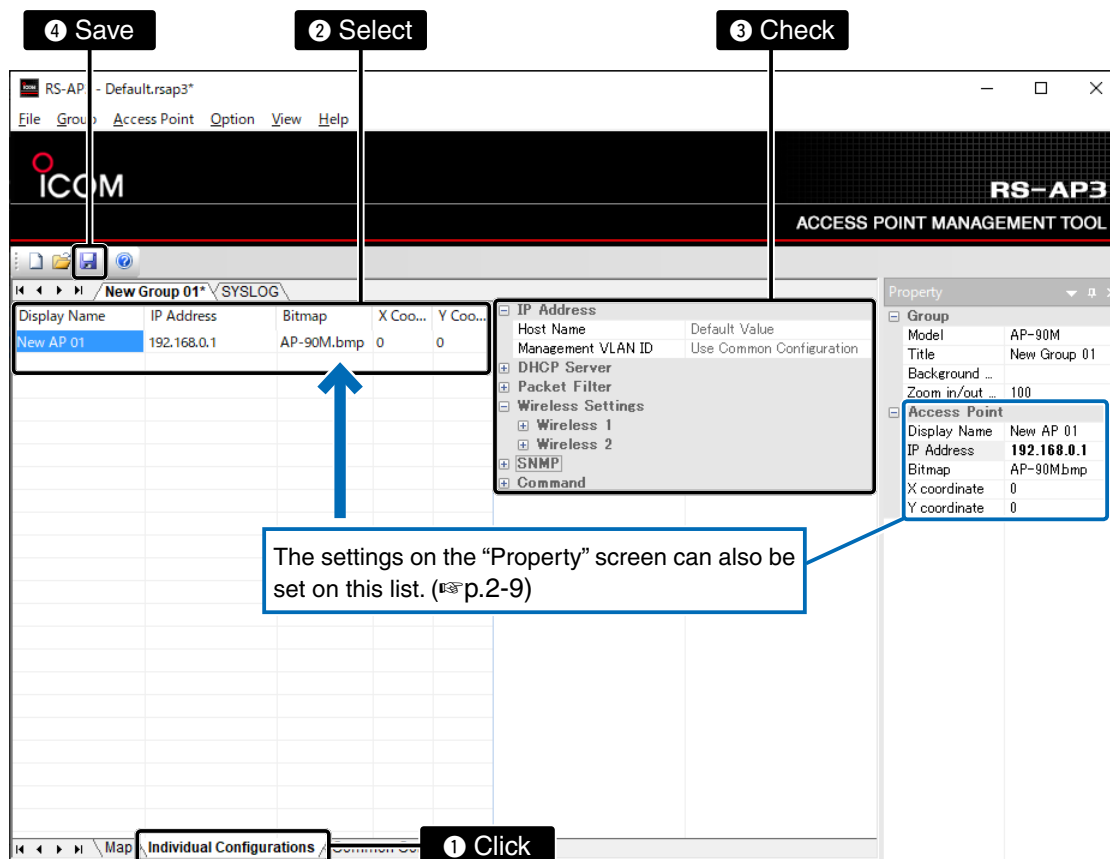
2. IP Address

Set "Host Name" and "Management VLAN ID" of the selected access point.
• To apply the changes, overwrite the settings, and then send the setting data to access points.
   (☞p.1-18 to p.1-20)
• Refer to the instruction manual (PDF) or online help for Icom's access point setting details.

Setting the Host Name

Enter a desired host name of up the 31 characters (a to z, A to Z, 0 to 9 and - (hyphen)).
A name starting or ending with a "-" (hyphen) cannot be registered.

4 INDIVIDUAL CONFIGURATIONS

3. DHCP Server

Set "DHCP Server" and "Static DHCP" for the selected access point.
• To apply the changes, overwrite the settings, and then send the setting data to access points.
  (☞p.1-18 to p.1-20)
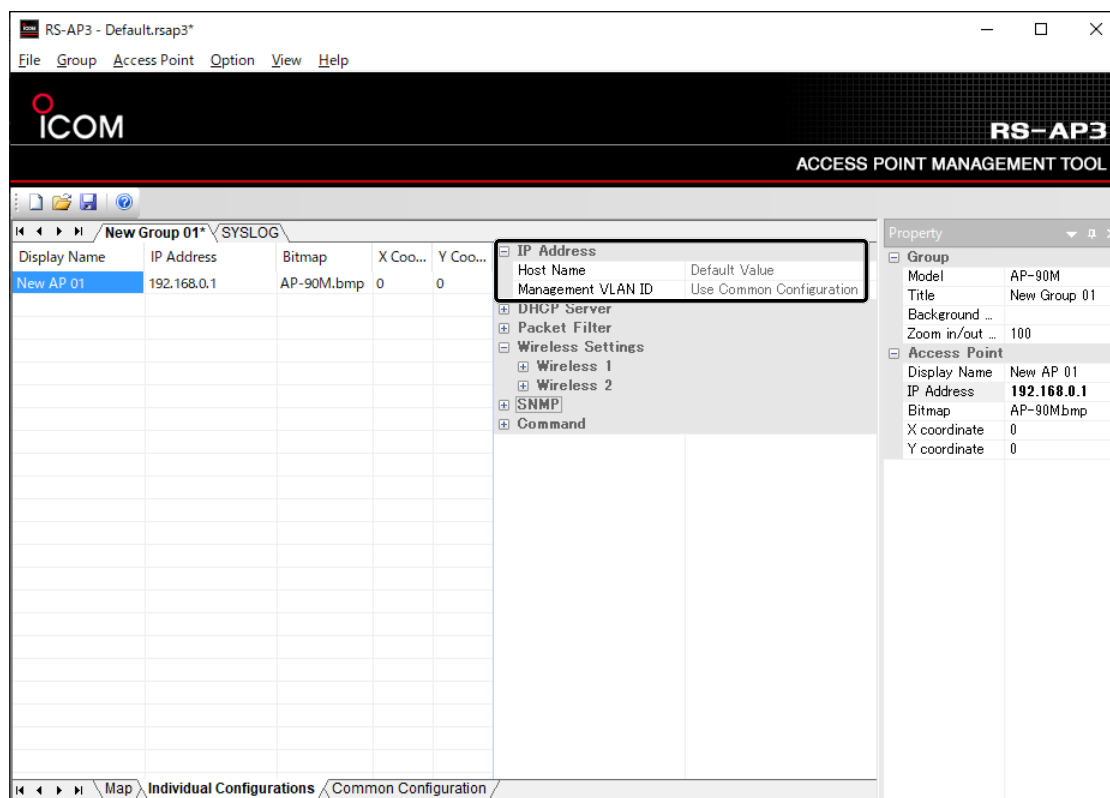• Refer to the instruction manual (PDF) or online help for Icom's access point setting details.

4. Packet Filter

Set "Packet Filter" for the selected access point.
• To apply the changes, overwrite the settings, and then send the setting data to access points.
  (☞p.1-18 to p.1-20)
• Refer to the instruction manual (PDF) or online help for Icom's access point setting details.

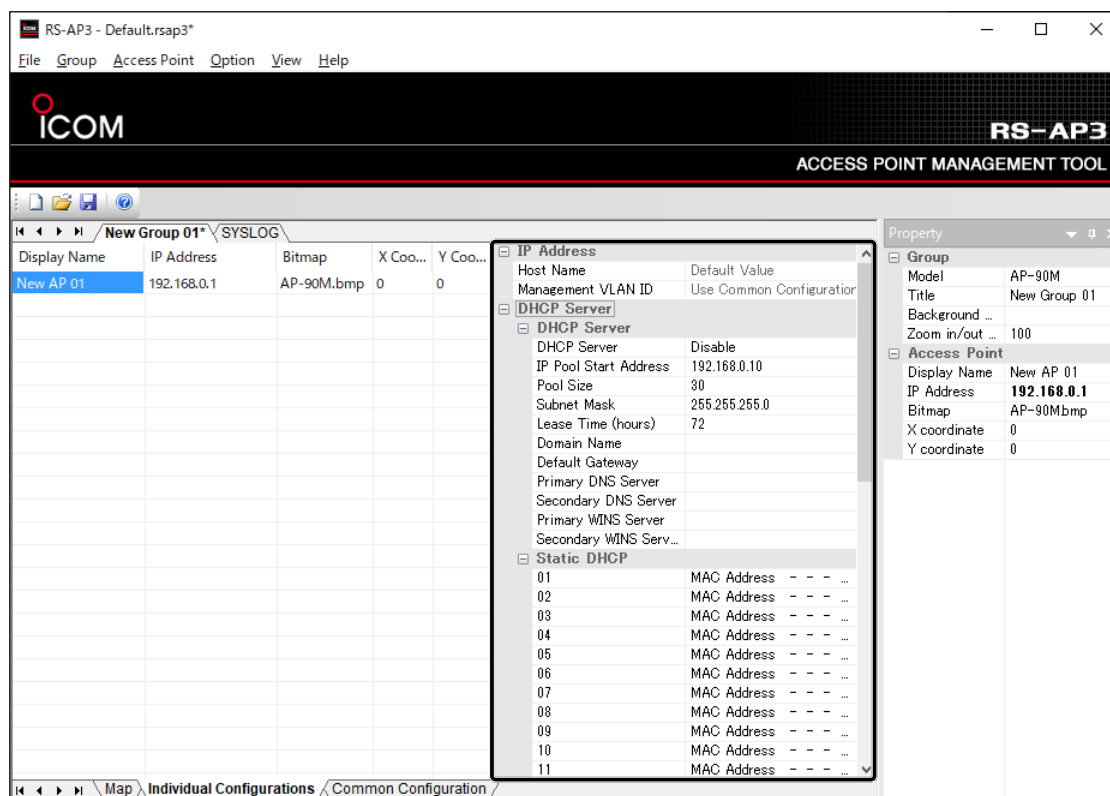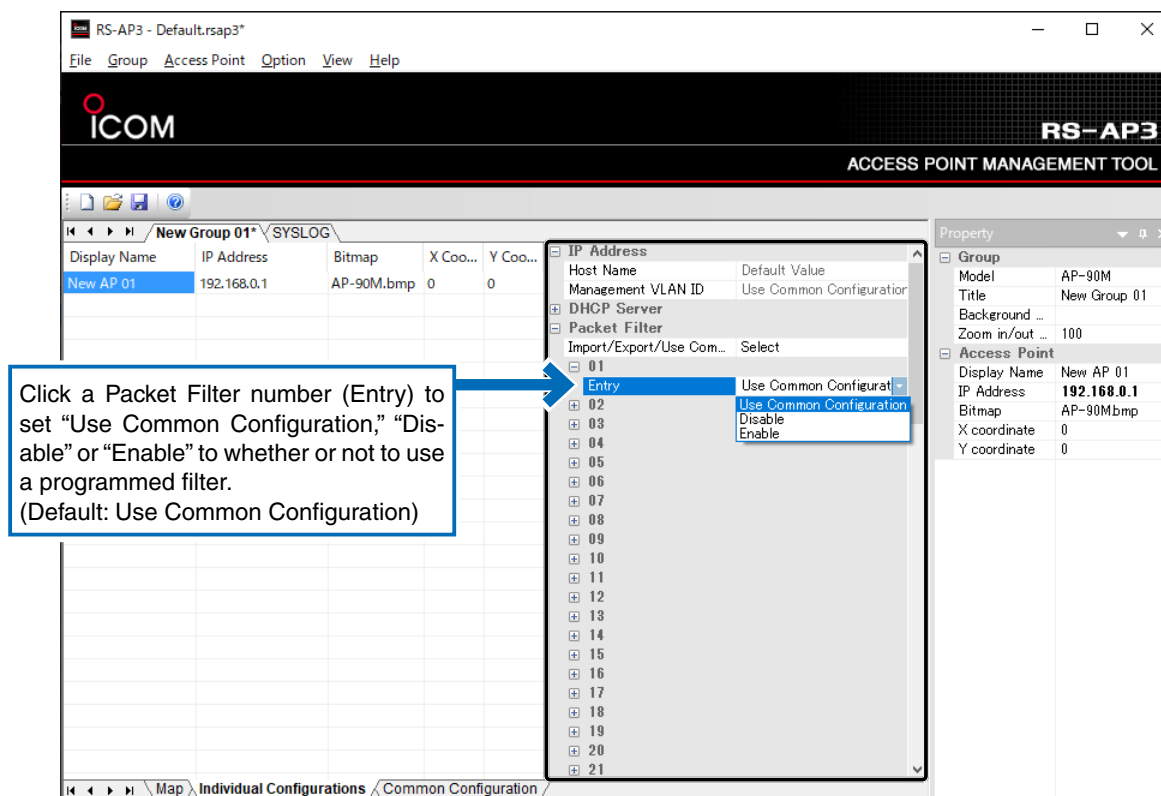Click a Packet Filter number (Entry) to set "Use Common Configuration," "Disable" or "Enable" to whether or not to use a programmed filter.
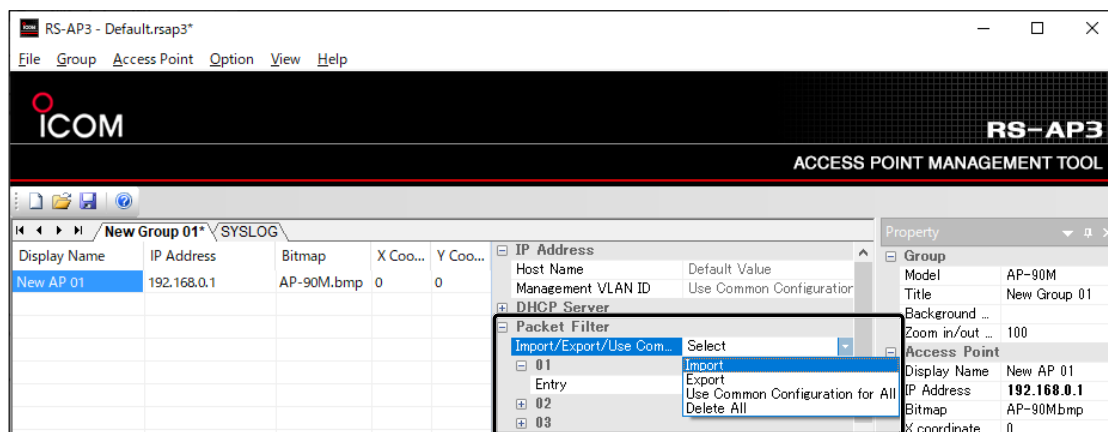(Default: Use Common Configuration)

4. Packet Filter (Continued)

Packet Filter Import/Export function

The "Import/Export/Use Common Configuration for All/Delete All" option can only be used when the RS-AP3 is used with Icom's access points.
The import, export, and packet filter settings can be simultaneously set to the selected access points.

❶ **Exporting**
  Exports the programmed packet filter as a text file (extension: txt.)
  1. Select "Export."
    • When no packet filter is programmed, "No settings to export." is displayed.
  2. Set a desired file name, and then click [Save].
    • The exported file can be edited with a text editor.

❷ **Importing**
  Imports exported files.
  1. Select "Import."
  2. Select a file for the packet filter, and then click [Open].
  3. Click [OK].
    • The existing packet filter is overwritten.
    • You can import only the file that is exported from [Export].
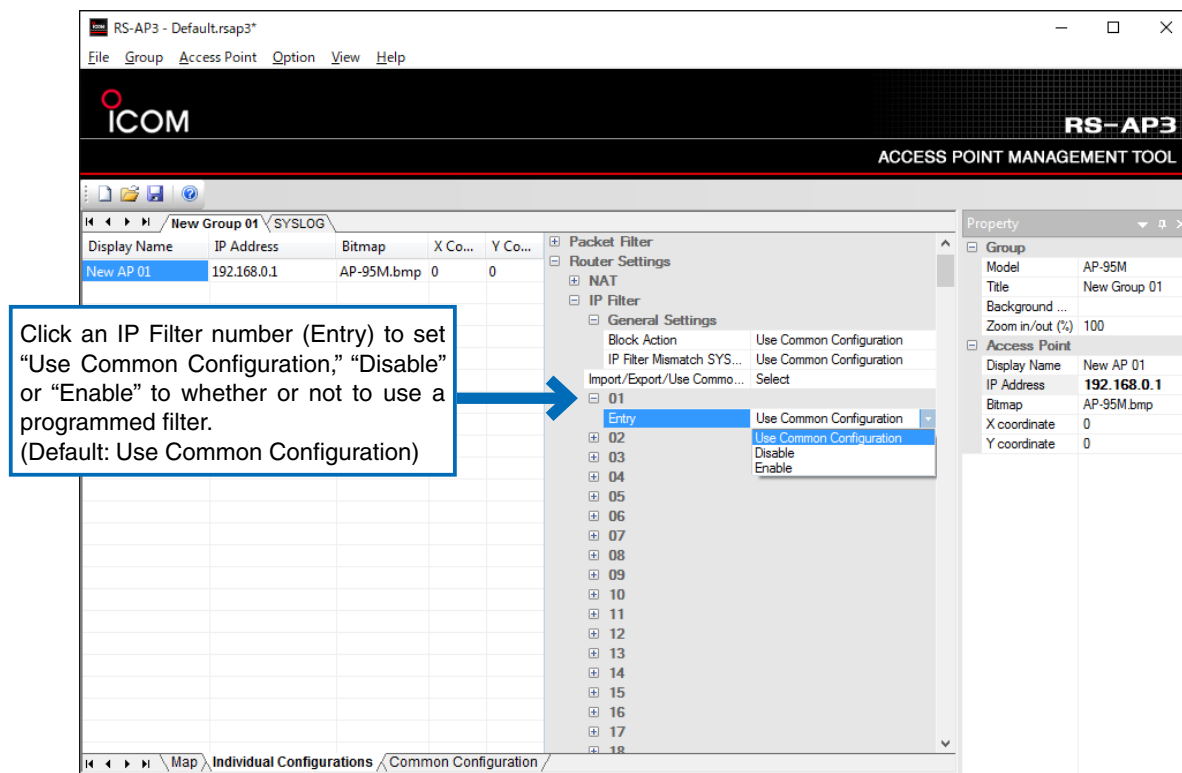
❸ **Setting all packet filters**
  1. Select "Use Common Configuration for All" or "Delete All."
  2. Click [Yes] to set or delete all packet filters that are programmed to the selected access points.

5. Router Settings

Set "Change address" and "IP filter" for the selected access point.
• This screen is displayed only when a wireless access point with router function is selected.
• To apply the changes, overwrite the settings, and then send the setting data to access points.
  (☞p.1-18 to p.1-20)
• Refer to the instruction manual (PDF) or online help for Icom's access point setting details.

Click an IP Filter number (Entry) to set "Use Common Configuration," "Disable" or "Enable" to whether or not to use a programmed filter.
(Default: Use Common Configuration)

5. Router Settings (Continued)

IP Filter Import/Export function

The "Import/Export/Use Common Configuration for All" option can only be used when the RS-AP3 is used with Icom's access points.
The import, export, and packet IP settings can be simultaneously set to the selected access points.
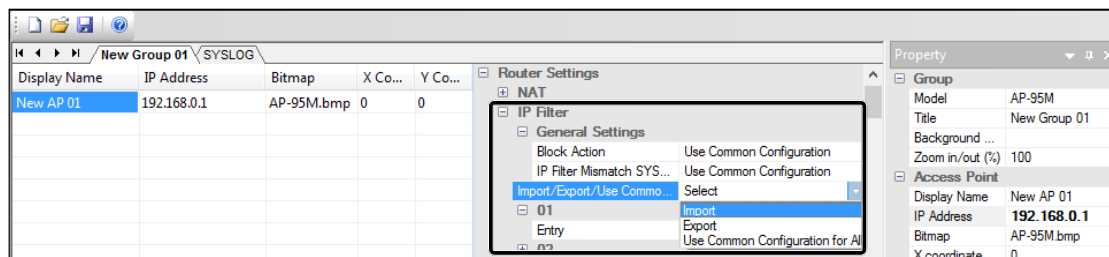
❶ **Exporting**
Exports the programmed IP filter as a text file (extension: txt.)
1. Select "Export."
   • When no IP filter is programmed, "No settings to export." is displayed.
2. Set a desired file name, and then click [Save].
   • The exported file can be edited with a text editor.

❷ **Importing**
Imports exported files.
1. Select "Import."
2. Select a file for the IP filter, and then click [Open].
3. Click [OK].
   • The existing IP filter is overwritten.
   • You can import only the file that is exported from [Export].

❸ **Setting all IP filters**
1. Select "Use Common Configuration for All."
2. Click [Yes] to set all IP filters that are programmed to the selected access points.
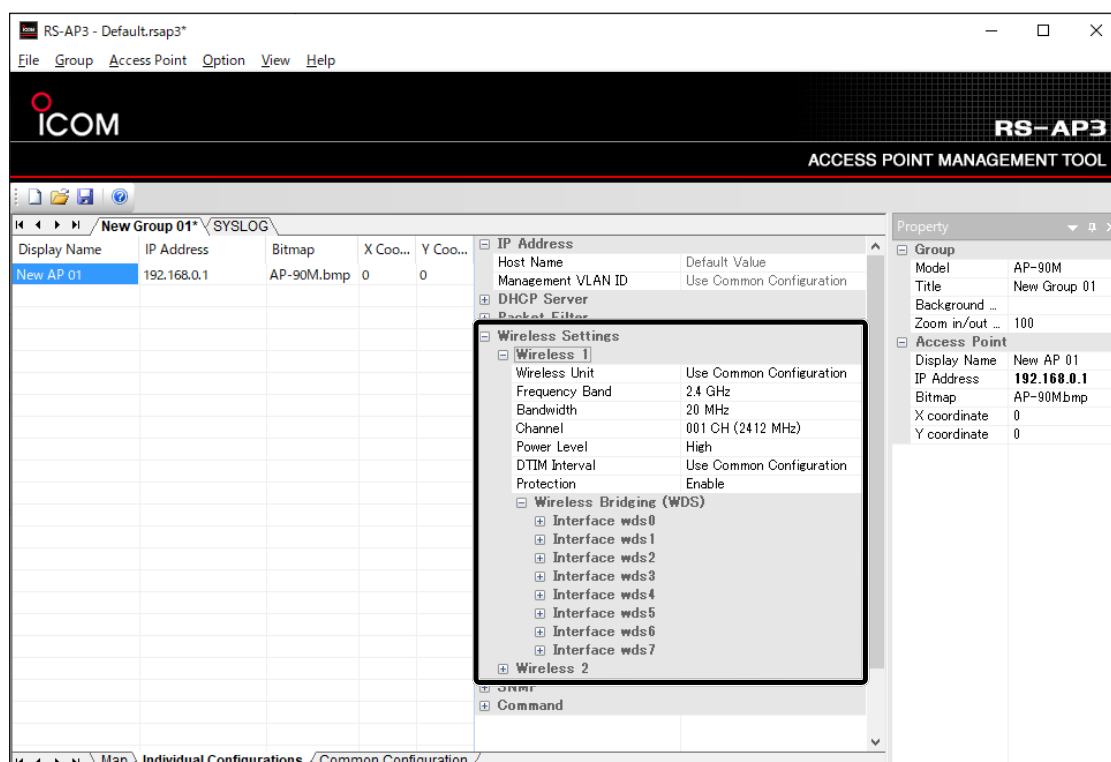
6. Wireless Settings

Set "Wireless Unit," "Channel," "Power Level" and so on for the selected access point.
• When "Frequency Band" is set to "Use Common Configuration," "Bandwidth," "Channel" and "Power Level" cannot be set.
• To apply the changes, overwrite the settings, and then send the setting data to access points.
  (☞p.1-18 to p.1-20)
• Refer to the instruction manual (PDF) or online help for Icom's access point setting details.

When using the Wireless Bridging function

1. Before enabling the access point management tools, set the Wireless Bridging function on the access point's setting screen.
2. Before starting the management of the contents set in the step 1, set the "Individual Configurations" screen.

When the Wireless Bridging is interrupted by setting modifications, the monitoring or setting modifications for the target access point are disabled.
To modify the "Wireless Bridging" settings, start modifying from the access points that can only be communicated with the Wireless Bridging function.
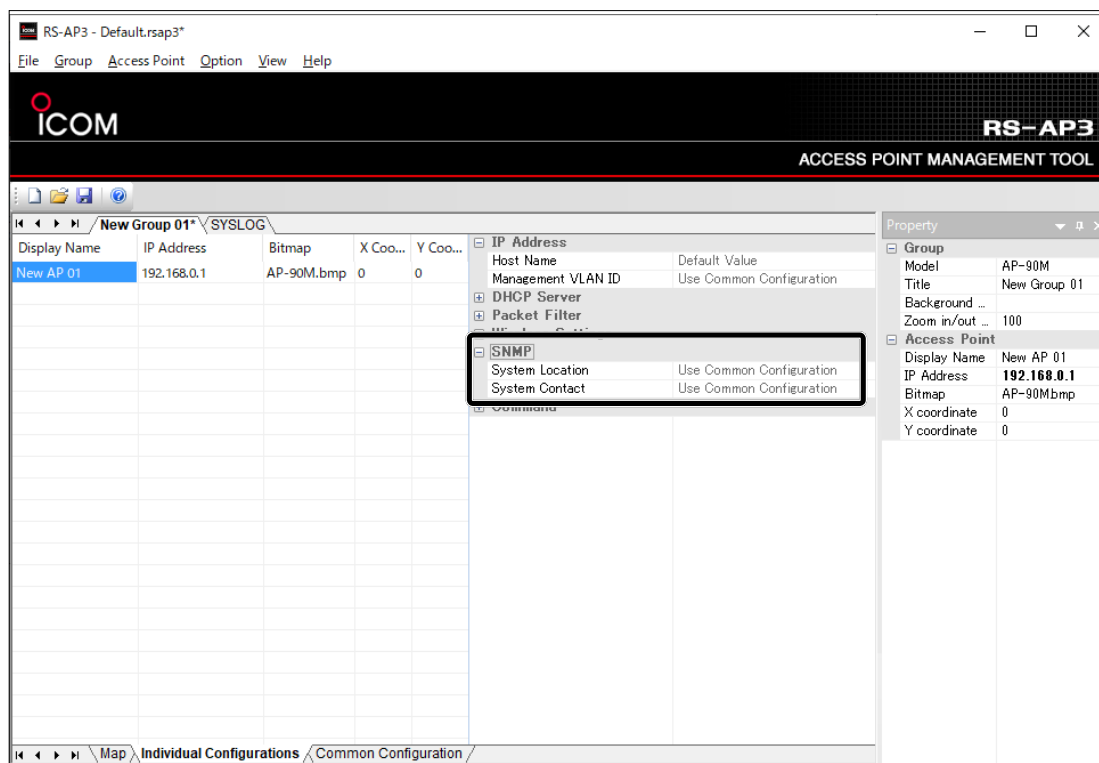
• When using the Wireless Bridging function with the Wireless 2 (external antenna's LAN unit) on the Icom's access points, the virtual AP on the "Common Configuration" also must be set.
  Refer to the product's instruction manual for more details.

7. SNMP

Set "System Location" and "System Contact" for the SNMP (Simple Network Management Protocol.)
• To apply the changes, overwrite the settings, and then send the setting data to access points.
  (☞p.1-18 to p.1-20)
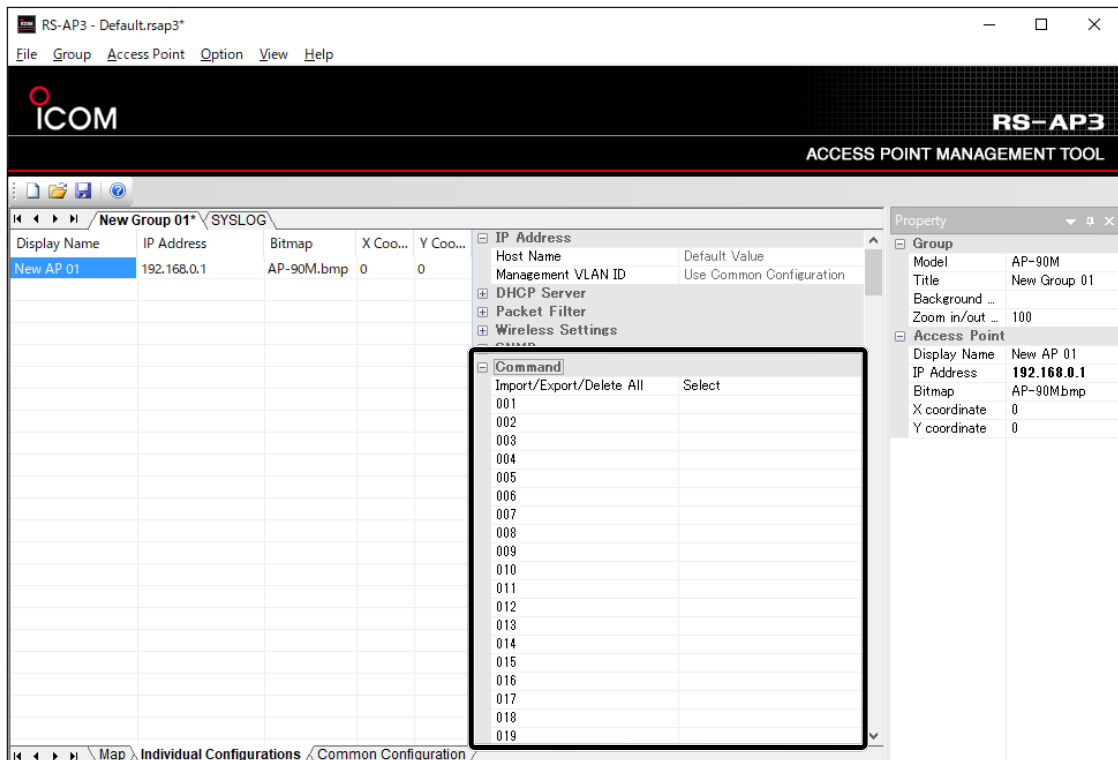• Refer to the instruction manual (PDF) or online help for Icom's access point setting details.

8. Command

The Command function is an expansion setting for the access point updates.
• This option is not used as of April 2022.

COMMON CONFIGURATION

5

5 COMMON CONFIGURATION

1. Operating

Click "Common Configuration" to display the configuration options to be commonly shared in the selected group.

If you change settings, the same settings are made to all the access points in the group.
(☞p.5-3 to p.5-10)

• To apply the changes, overwrite the settings, and then send the setting data to access points.
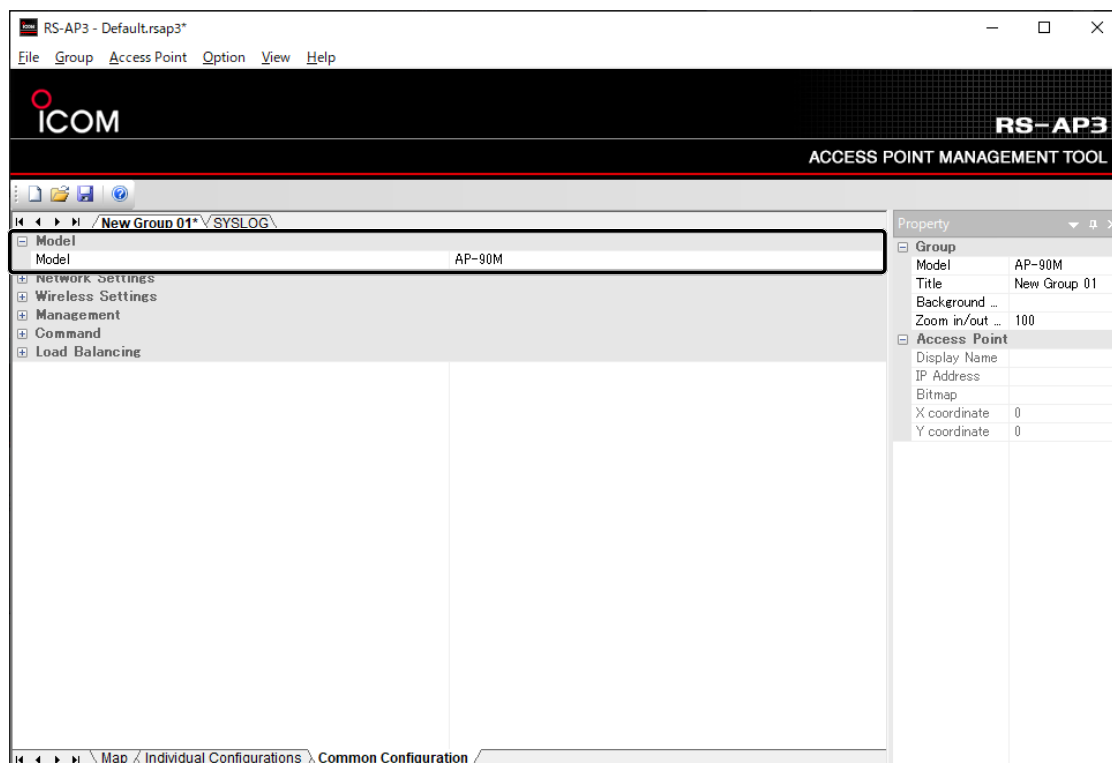 (☞p.1-18 to p.1-20)

• The Individual Configurations have higher priority over the Common Configuration. (☞p.4-1)
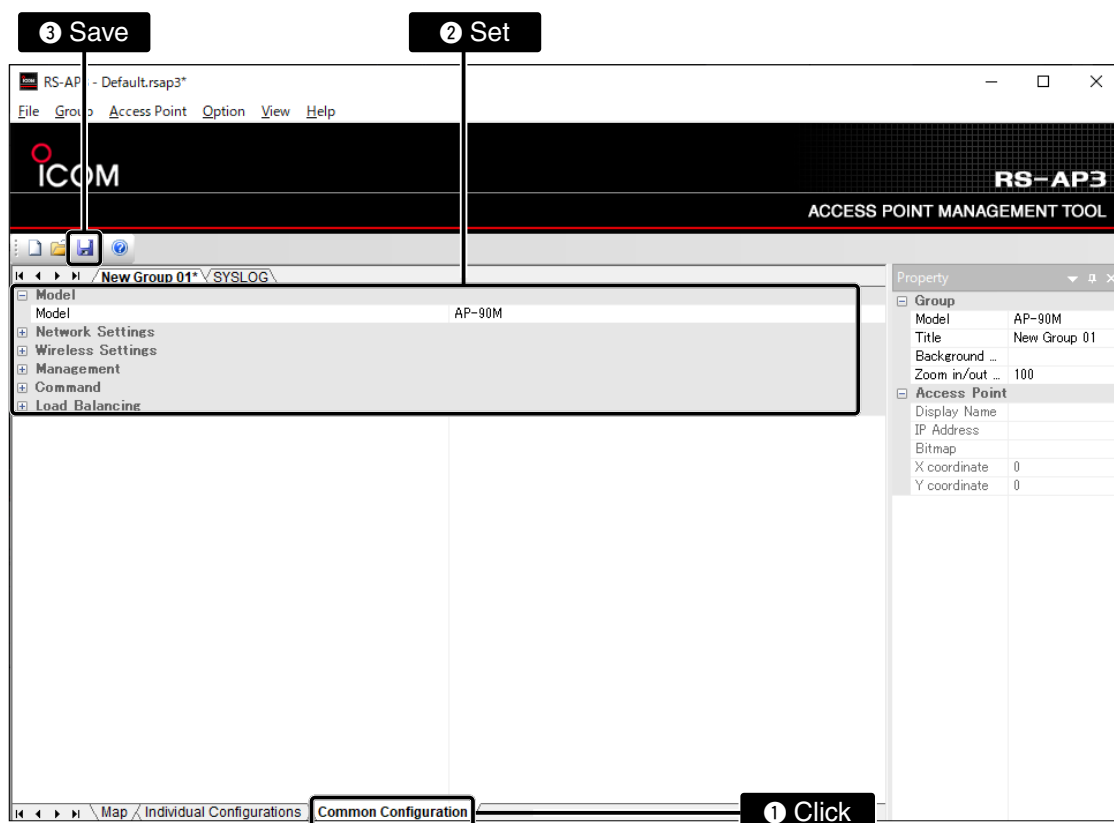
2. Model

Check the model of the access point assigned to the selected group.

Changing the model

To change the model that was selected when you created the group (☞p.1-7), click on the model name, and then select from the drop down list.
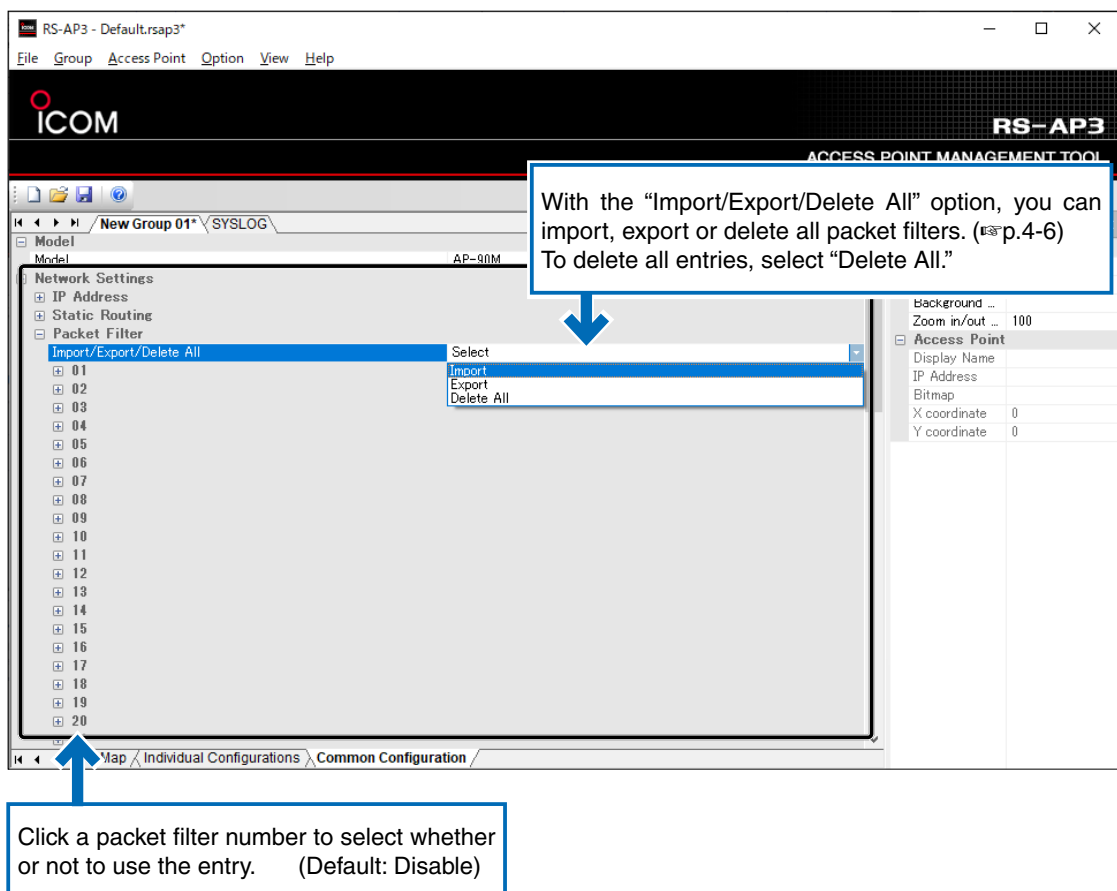• To apply the changes, overwrite the settings, and then send the setting data to the access points.
  (☞p.1-18 to p.1-20)
• Refer to the instruction manual (PDF) or online help for Icom's access point setting details.

3. Network Settings

Set "Static Routing," "Packet Filter" and so on to be commonly shared in the selected group.
• To apply the changes, overwrite the settings, and then send the setting data to the access points.
  (☞p.1-18 to p.1-20)
• Refer to the instruction manual (PDF) or online help for Icom's access point setting details.

With the "Import/Export/Delete All" option, you can import, export or delete all packet filters. (☞p.4-6)
To delete all entries, select "Delete All."

Click a packet filter number to select whether or not to use the entry.   (Default: Disable)

3. Network Settings (Continued)

Web Authentication (Advanced)

The "Import/Export/Delete All" option can only be used when the RS-AP3 is used with Icom's access points. You can import, export or delete all the entries on the local list on each virtual access point (interface.)
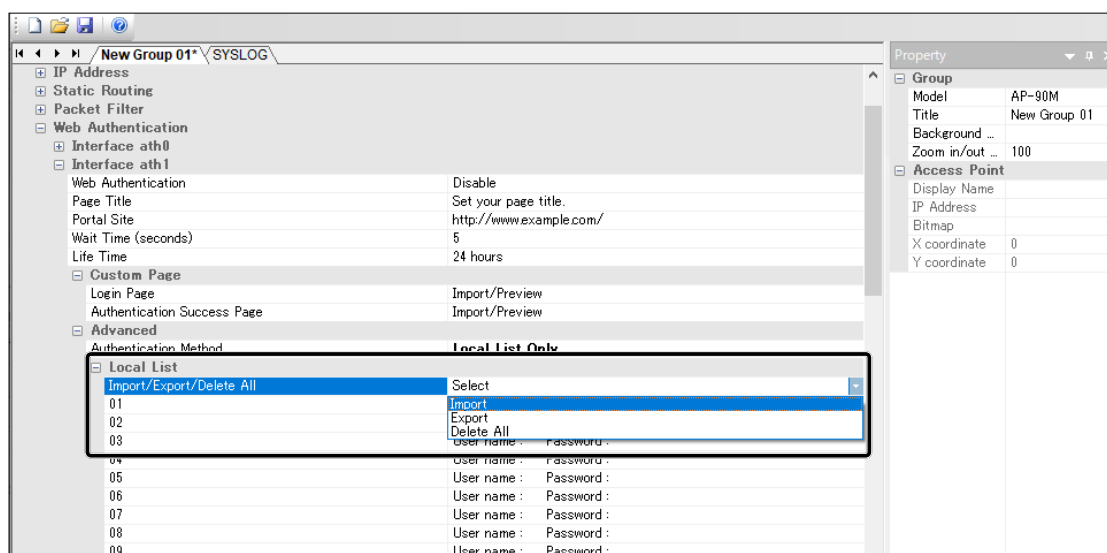
❶ **Exporting**
Exports the programmed local list as a text file (extension: txt.)
1. Select "Export."
   • When no local list is programmed, "No items to export in the Local List." is displayed.
2. Set a desired file name, and then click [Save].
   • The exported file can be edited with a text editor.

❷ **Importing**
Imports exported files.
1. Select "Import."
2. Select a file for the local list, and then click [Open].
3. Click [OK].
   • The existing local list is overwritten.
   • You can import only the file that is exported from [Export].

❸ **Deleting all local lists**
1. Select "Delete All."
2. Click [Yes] to delete all the local list that are registered in the selected virtual access point.

5 COMMON CONFIGURATION

4. Router Settings

Set "IP filter" to be commonly shared in the selected group.
- This screen is displayed only when a wireless access point with router function is selected.
- To apply the changes, overwrite the settings, and then send the setting data to access points.
  (☞p.1-18 to p.1-20)
- Refer to the instruction manual (PDF) or online help for Icom's access point setting details.

With the "Import/Export/Delete All" option, you can import, export or delete all IP filters. (☞p.4-8)
To delete all entries, select "Delete All."

Click an IP filter number to select whether or not to use the entry.　　　(Default: Disable)
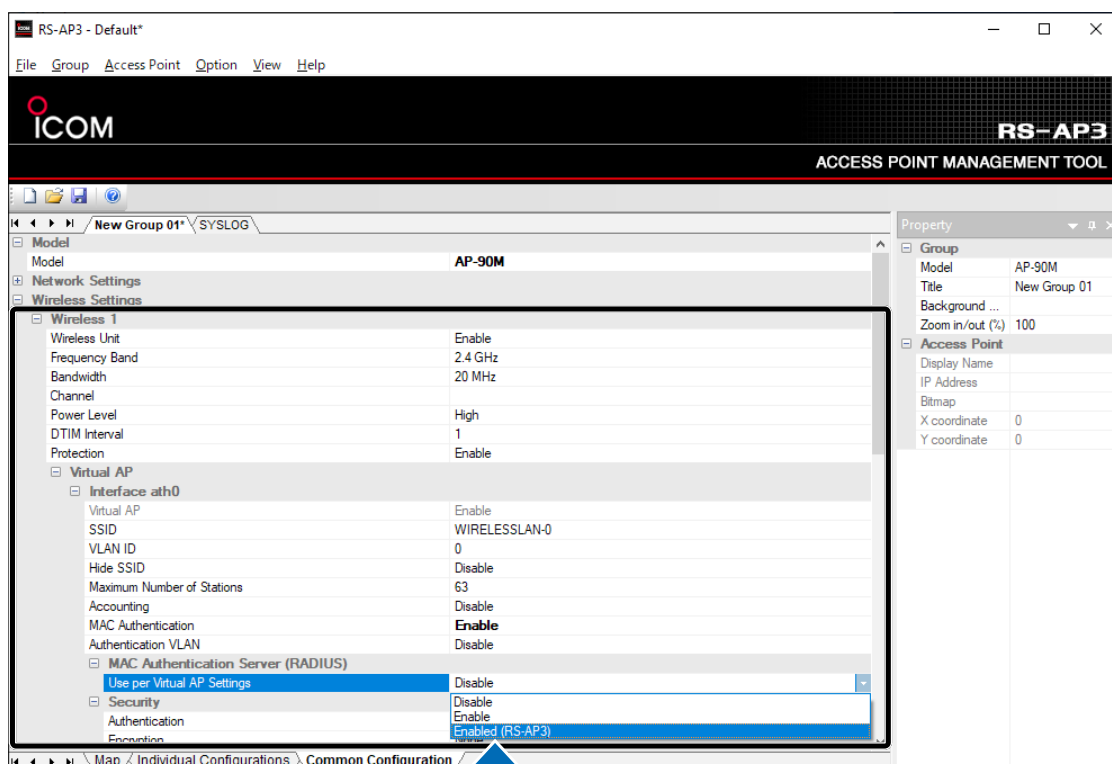
5. Wireless Settings

Set "Bandwidth," "Channel," "Power Level" and so on to be commonly shared in the selected group.
• To apply the changes, overwrite the settings, and then send the setting data to wireless access points.
  (☞p.1-18 to p.1-20)
• Refer to the instruction manual (PDF) or online help for Icom's access point setting details.

Select "Enabled (RS-AP3)" when using the MAC Authentication Server (RADIUS).
Refer to page 3-29 and 3-30 for the MAC Authentication Server settings.
• The RS-AP3's MAC Authentication Server function (RADIUS) cannot be used as the VLAN authentication server. (Attribute responder not supported)
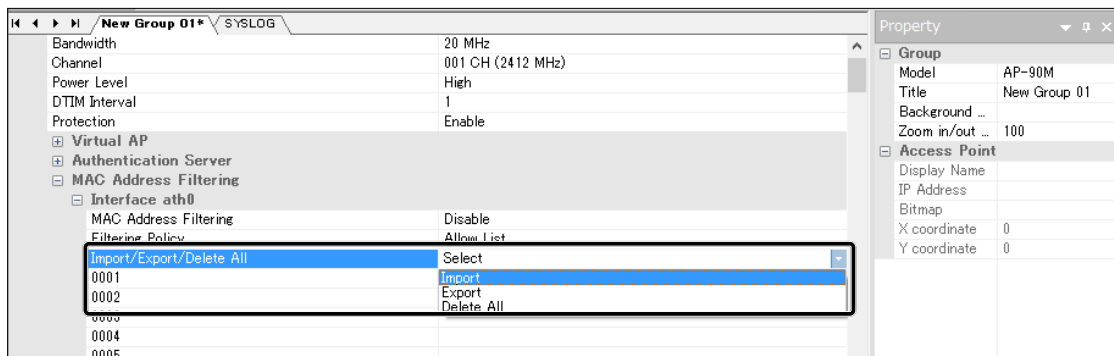
5. Wireless Settings (Continued)

Setting the MAC address filtering

The "Import/Export/Delete All" option can only be used when the RS-AP3 is used with Icom's wireless access points.
You can import, export or delete all the MAC addresses on each virtual access point (interface.)

❶ **Exporting**

Exports the programmed MAC addresses as a text file (extension: txt.)
1. Select "Export."
   • When no MAC address is programmed, "No MAC address to export." is displayed.
2. Set a desired file name, and then click [Save].
   • The exported file can be edited with a text editor.
   • The following MAC addresses are taken as identical address.
     (Example: 0090C7777777 and 00-90-C7-77-77-77)

❷ **Importing**

Imports exported files.
1. Select "Import."
2. Select a file for the MAC address, and then click [Open].
3. Click [OK].
   • The existing MAC address is overwritten.
   • You can import only the file that is exported from [Export].

❸ **Deleting all MAC addresses**

1. Select "Delete All."
2. Click [Yes] to delete all the MAC addresses that are registered in the selected virtual access point.
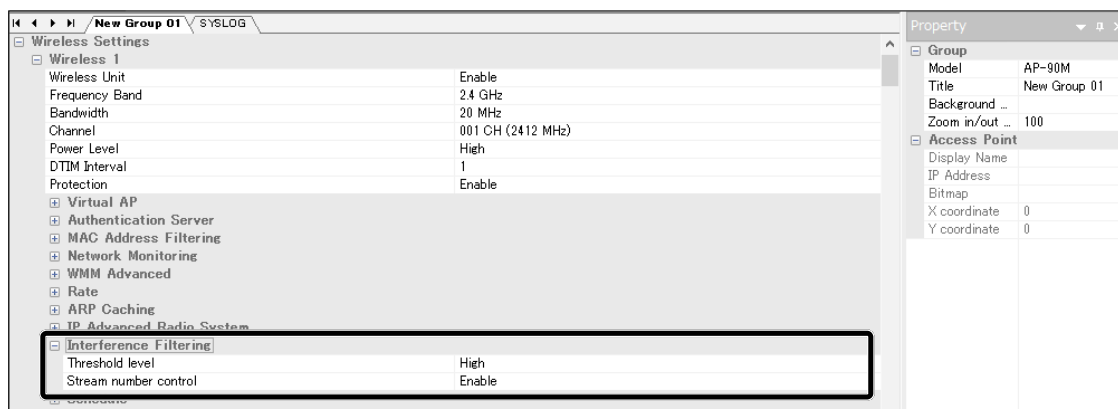
5. Wireless Settings (Continued)

Setting the interference filtering

The "Interference Filtering" options can only be used when the RS-AP3 is used with Icom's wireless access points.

The communication status is improved when a signal interference is found.

You can set the threshold level and the function to each wireless unit.

• The effects may differ, depending on the environment.

• It is not necessary to always have the RS-AP3 connected after setting the filtering because it is controlled on the wireless access point side.

Threshold level
Select the filtering threshold level between "High," "Middle," and "Low."   (Default: Disable)
The filtering is more sensitive while the threshold level is set to "Low."

Stream number control
Select "Enable" to change between 2 streams and 1 stream.   (Default: Disable)

5. Wireless Settings (Continued)

Setting the schedule

The "Schedule" options can only be used when the RS-AP3 is used with Icom's wireless access points.
You can set the day and the time for wireless shut down in up to 16 different ways to each wireless unit.
• The time is synchronized with the time set to the access point.
  We recommend that you enable the NTP function.
• It is not necessary to always have the RS-AP3 connected after setting the schedule because it is controlled on the wireless access point side.


Set the wireless shutdown day and the time as shown above.
For example, if "Fri 23:00 - 06:00" is set, the wireless system is shutdown from Friday at 23:00 to Saturday at 06:00. When the shutdown time and the end time are set at same time (example: "00:00 - 00:00" or "12:34 - 12:34"), the wireless system is shutdown for 24 hours.

6. Management

Set "Administrator," "SYSLOG," "SNMP" and so on to be commonly shared in the selected group.
- To apply the changes, overwrite the settings, and then send the setting data to the access points.
  (☞p.1-18 to p.1-20)
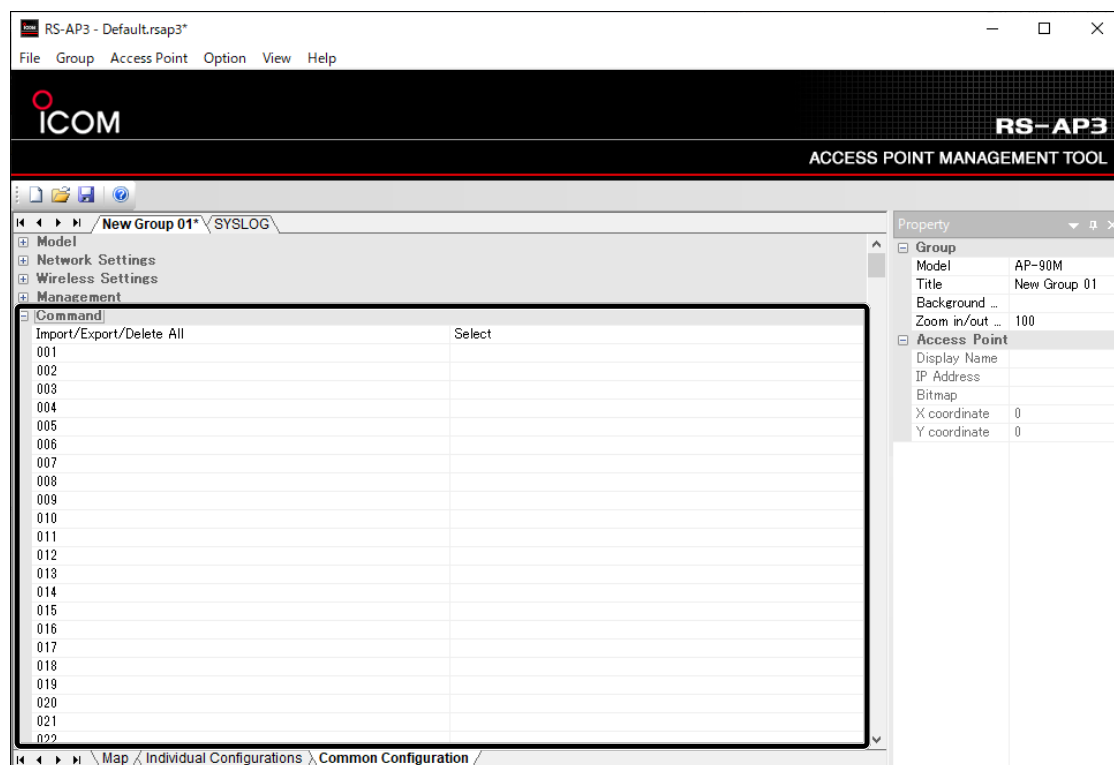- Refer to the instruction manual (PDF) or online help for Icom's access point setting details.
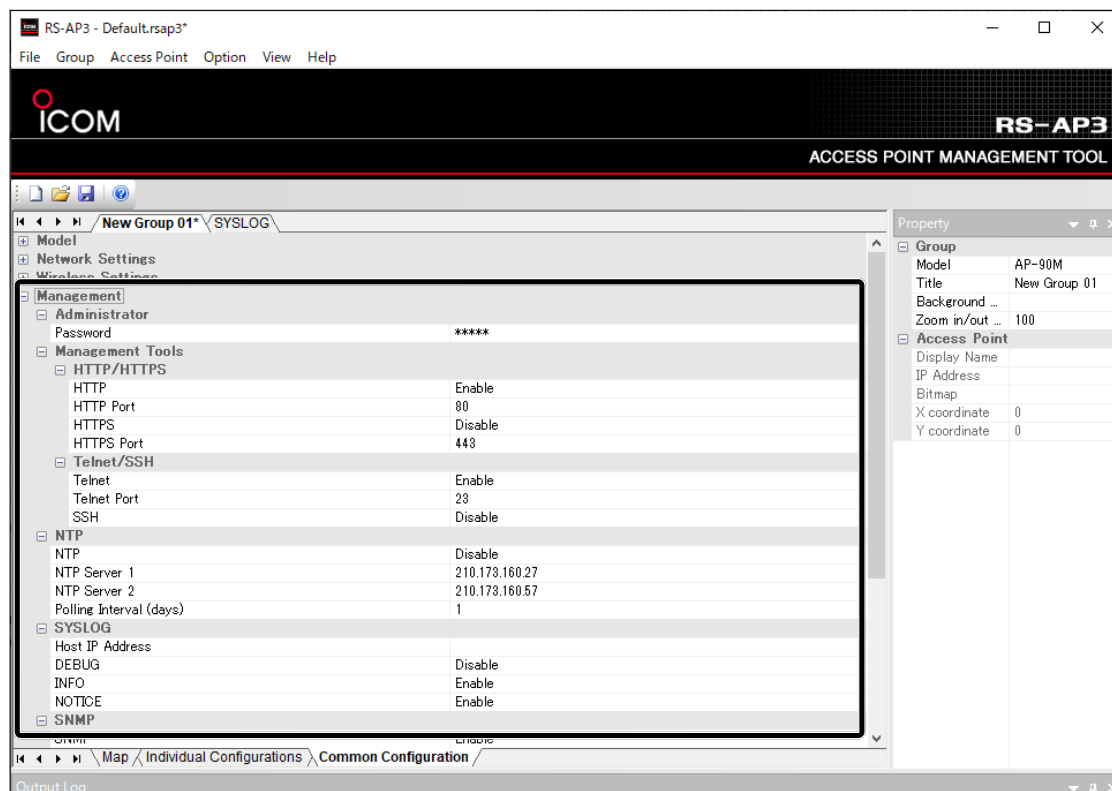
5 COMMON CONFIGURATION

7. Command

The Command function is an expansion setting for the access point updates.
• This option is not used as of April 2022.

8. Load Balancing

The Load Balancing function, that is commonly shared in the selected group, can be used only when Icom's wireless access points and the RS-AP3 are used together.   (Default: Disable)
If you "Enable" the Load Balancing setting, this function distributes the loadings according the status of the access points or wireless LAN terminals that is included in the regularly received information.
• If "Disable" is selected, the Load Balancing function will not distribute loadings, even if the operating conditions are satisfied.
• In order to control the Load Balancing function, the RS-AP3 needs to be connected at all times.

Operating Conditions
If either the amount of connected wireless LAN terminals or the communication volume, or both reach the conditions, the half of the connected wireless LAN terminals will be cut off.

• Amount of wireless LAN terminals may differ depending on the Maximum Number of Stations settings.

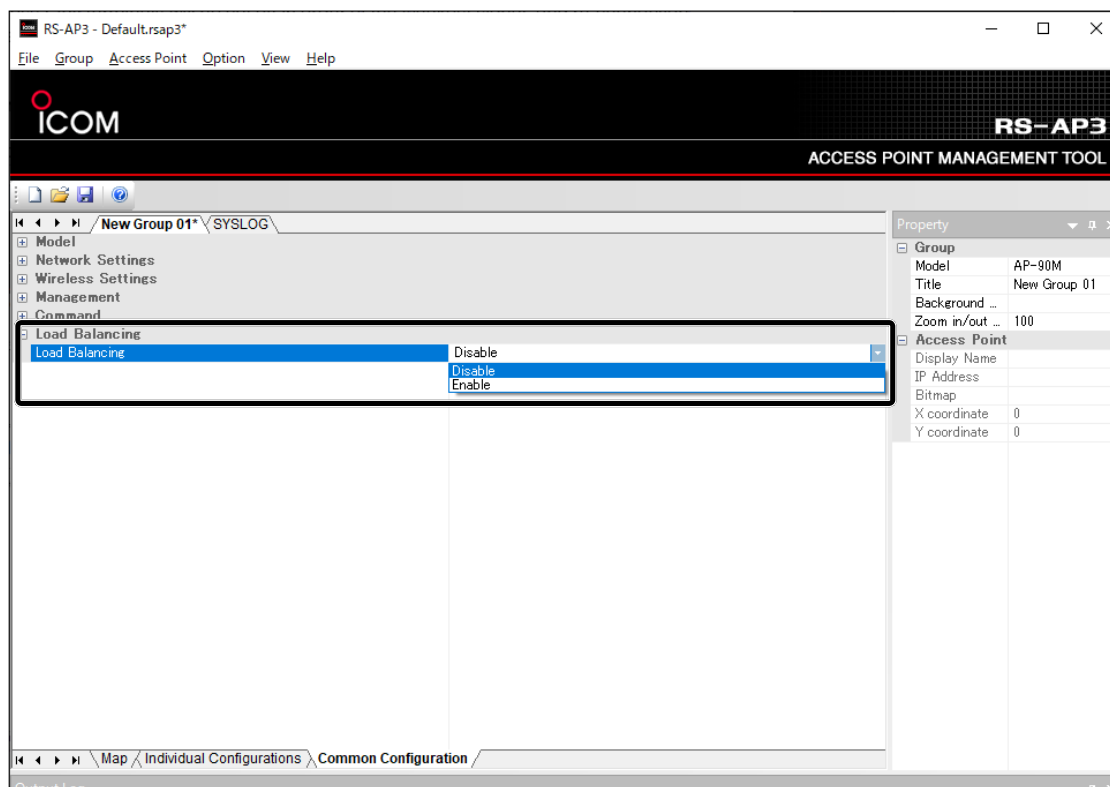| Maximum Number of Stations	5 or less	6 to 29	30 or more
Amount of wireless LAN terminals connected to the virtual AP	No limitation by amount	1 less than the set Maximum Number of Stations	Fixed 30, regardless of the Maximum Number of Stations

• When a virtual AP has communicated continuously with more than 96 Mbps speed for more than 30 seconds.

Operation
The half of the connected wireless LAN terminals will be cut off in order of the weakest signal, and re-connection will be inhibited for 60 seconds.

Example:
While the Balance Loading function is enabled and 9 wireless LAN terminals are connected to the Virtual AP with Maximum Number of Stations set to 10, cuts off 4 connected wireless LAN terminals in order of the weakest signal, and re-connection will be inhibited for 60 seconds.

INFORMATION

6

6 INFORMATION

1. Notification by email function

This function is to send access point information to the email address set beforehand.

Notification conditions
• When no notification is received from an access point for more than the time set in "Fault Log Timer" (☞p.3-34).
• When the connection is rejected by the MAC address filtering system.
• When the connection is rejected by exceeding the maximum number of stations.
• When a station is disconnected by a MIC failure (replay protection) in the WPA authentication.

Notification examples

(Fault) [2 errors] Announcements from the RS-AP3

2014-06-12 08:08:50   Notification on Faults

An error was reported from an access point under management.
2014-06-12 08:08:41 192.168.0.1 (New Group 01, New AP 01) 192.168.0.1: No notifications from the access point for over 60 seconds.
2014-06-12 08:08:41 192.168.0.2 (New Group 01, New AP 02) 192.168.0.2: No notifications from the access point for over 60 seconds.
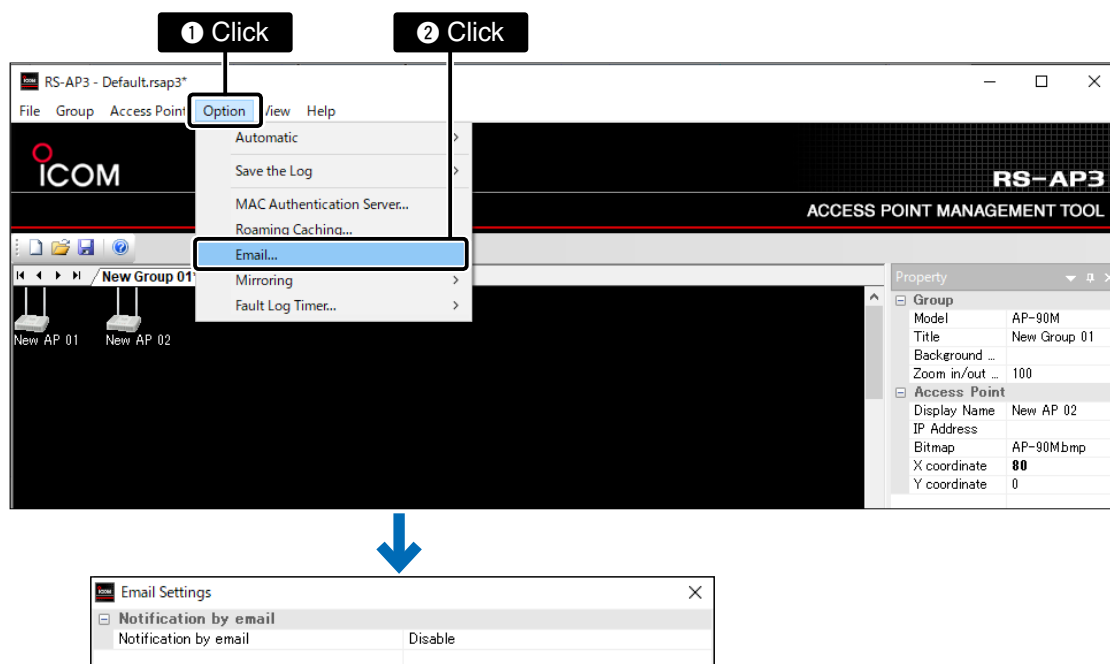
No error was detected in Mirroring.
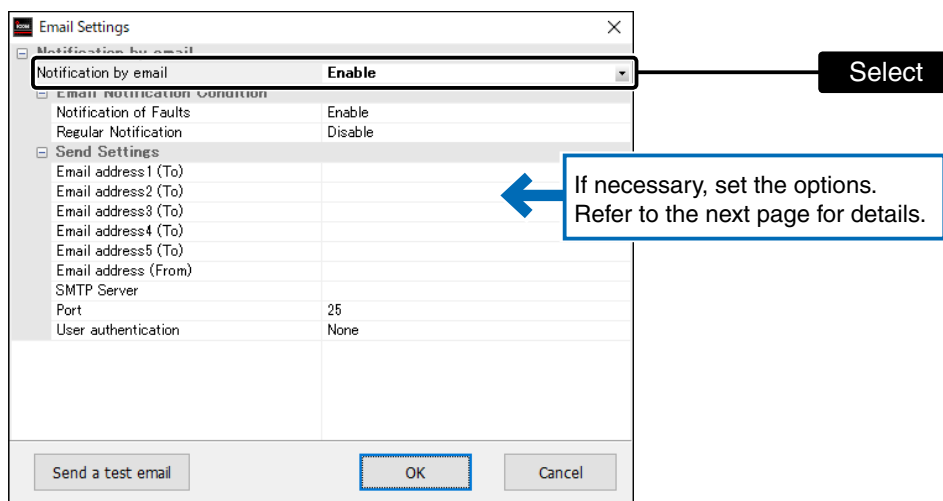
1. Notification by email function (Continued)

Setting the Notification by email

You need a network that can access a POP/SMTP server to use the Notification by email function.

1 Click "Option" and then "Email...".
The "Email Settings" window is displayed.

2 Select "Enable."
Clicking [X] on the window top before enabling the setting will close the window without saving the changes.

1. Notification by email function (Continued)

Notification by email setting options

When the user authentication method is set to "POP before SMTP."

❶ **Notification on Faults**............ Set "Enable" to send an email whenever an illegal access or notification fault is detected.   (Default: Enable)

❷ **Regular Notification** .... Regularly sends access point information using the Notification by email function.   (Default: Disable)
Options are added when this is set to "Enable."

Interval (minutes)
Set the notification sending interval to between 1 and 9999 minutes.
(Default: 10)

Notification with or without faults
If "Enable" is set, the notification is sent at regular intervals.
(Default: Disable)

❸ **Email address 1~5 (To)** .... Enter up to 5 email addresses to send access point information to.

❹ **Email address (From)**........... Enter the email address to send access point information from.

1. Notification by email function (Continued)

Notification by email setting options (Continued)

⑤ **SMTP Server** .... Enter the server address to send the email.

⑥ **Port** .... Enter the server's port number between 1 and 65535 to send the email.
(Default: 25)

⑦ **User authentication** .... Set the user authentication method to send email.   (Default: None)
None
Does not authenticate the user when sending the email.

POP before SMTP
Authorizes the use of SMTP server by accessing the selected POP server before sending the email.
• APOP (⑧) can also be used as a combination.

SMTP Authentication
Authorizes by adding the user authentication system to the SMTP which is the protocol to send the email.

⑧ **APOP** .... Authentication method to encrypt the password to receive emails.
(Default: Disable)
POP generally sends the password in plain text. This may cause the password being peeped.
APOP enables you avoid this danger by encrypting the password to send.
• This option is only displayed when "POP before SMTP" is selected as the User authentication (⑦.)

⑨ **POP Server** .... Enter the POP server address.
• This option is only displayed when "POP before SMTP" is selected as the User authentication (⑦.)

1. Notification by email function (Continued)

Notification by email setting options (Continued)

⑩ **User Name**.............................. Enter the user name to access the POP or SMTP server.
  • This option does not display when "None" is selected for the User authentication (❼.)

⑪ **Password**................................ Enter the password to access the POP or SMTP server.
  • This option does not display when "None" is selected for the User authentication (❼.)

⑫ **[Send a test email]**................. Sends a test email to confirm the setting contents in the "Email Settings" window.
  Click it, and when the dialog shown below appears, the test email has been sent to the set email address (❸.) (☞p.6-4)
  • When multiple email addresses are set, the dialog appears if the test email has been successfully sent to any one of the set addresses.
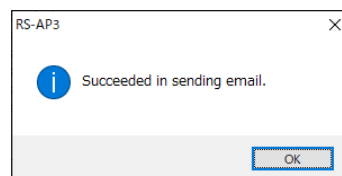
⑬ **[OK]**... Enables the settings set in the "Email Settings" window.
  • The window closes.

⑭ **[Cancel]** .... To cancel the change entry before saving.
  To save the changes, click [OK].
  • The window closes.
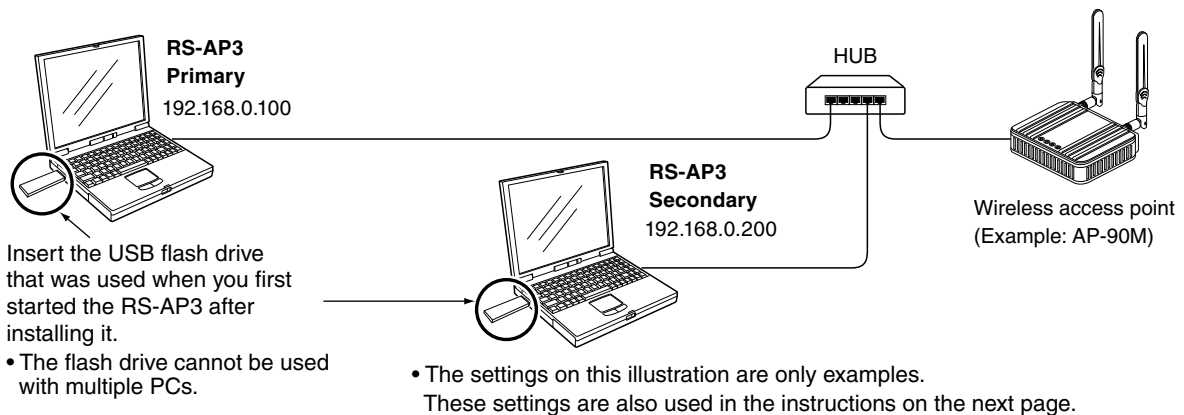
2. To prevent the management inability

Set the Mirroring function that can synchronize the setting data with another PC with the RS-AP3 installed.

The function avoids disabilities of not being able to operate when one PC with the RS-AP3 installed has problems, and enables you to operate on the other PC (secondary) that is synchronized with the one with problems.

• If you change the settings and save to overwrite after synchronizing the setting data, you need to synchronize again. (☞p.6-10)

Using the Mirroring function

➥ Prepare two RS-AP3s (USB flash drive with the same license.)
➥ Install the RS-AP3 on two PCs.
  • Set the static IP addresses to the PCs.
  • Set the same User ID and password for the primary and the secondary RS-AP3.
  • The mirroring function cannot be used if the RS-AP3 versions are different.
  • All of these settings are described as if the access point (example: AP-90M) is operated from the primary RS-AP3.
  • Following the steps on page 6-8, set the mirroring function on the primary and secondary RS-AP3s.

RS-AP3 Primary
192.168.0.100

HUB

RS-AP3 Secondary
192.168.0.200

Wireless access point
(Example: AP-90M)

Insert the USB flash drive that was used when you first started the RS-AP3 after installing it.
• The flash drive cannot be used with multiple PCs.

• The settings on this illustration are only examples.
  These settings are also used in the instructions on the next page.


Words used when setting
Primary: The daily used PC with the RS-AP3 installed.
Secondary: The PC with the RS-AP3 installed that is synchronized with the primary PC, when the mirroring function is used.
Local host: Directly used PC.
Remote host: Remotely controlled PC through a network.
              (Primary to secondary or secondary to primary)

6 INFORMATION

2. To prevent the management inability (Continued)

Setting the Mirroring function

Enable the mirroring function of the RS-AP3s on the primary and secondary PCs.
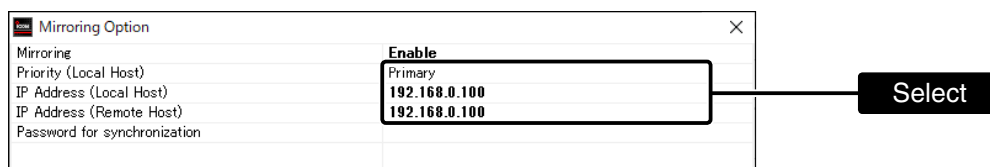
1   Click "Option" > "Mirroring" > "Options..."
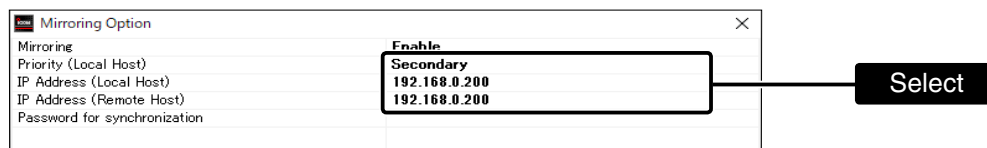   The "Mirroring Option" window is displayed.
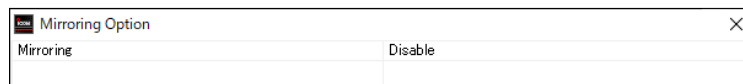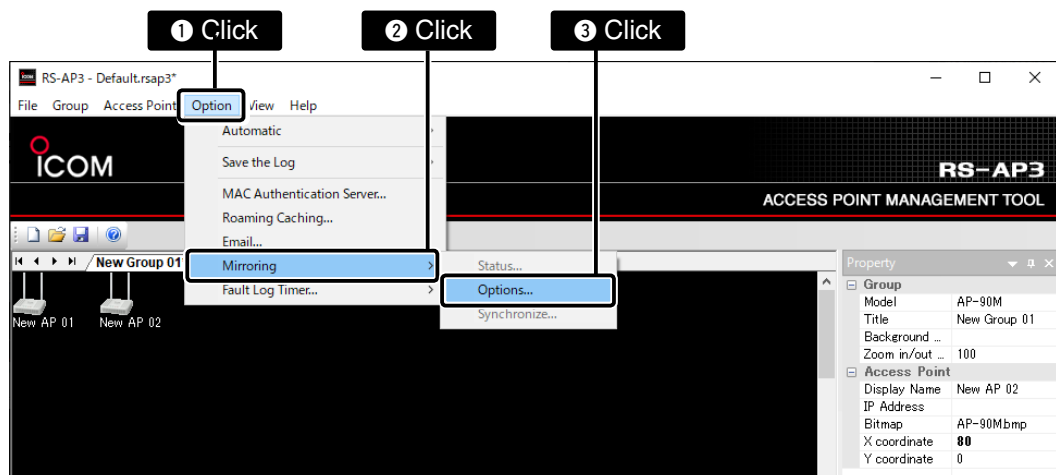
2   Select "Enable" for "Mirroring."

3   Select the Priority (Local Host) and the IP Address (Local Host.)
    Primary: 192.168.0.100

    Secondary: 192.168.0.200

6 INFORMATION

2. To prevent the management inability (Continued)

Setting the Mirroring function (Continued)

4   Enter the Remote Host's IP address and the password for synchronization.
- Enter a desired password of up to 31 characters.
  The password will be displayed in asterisks.
- Set the same synchronization password (example: icom) to the primary and the secondary.

Primary: 192.168.0.200/icom

Mirroring Option	✕
Mirroring	Enable
Priority (Local Host)	Primary
IP Address (Local Host)	192.168.0.100
IP Address (Remote Host)	192.168.0.200
Password for synchronization	****

Enter

Secondary: 192.168.0.100/icom

Mirroring Option	✕
Mirroring	Enable
Priority (Local Host)	Secondary
IP Address (Local Host)	192.168.0.200
IP Address (Remote Host)	192.168.0.100
Password for synchronization	****

Enter

5   Click "OK."
- Follow the steps on the next page to synchronize the setting data.

Mirroring Option	✕
Mirroring	Enable
Priority (Local Host)	Secondary
IP Address (Local Host)	192.168.0.200
IP Address (Remote Host)	192.168.0.100
Password for synchronization	****

OK   Cancel

Click

2. To prevent the management inability (Continued)

Synchronizing the setting data

After enabling the mirroring function of the primary and secondary PCs, follow the instructions below to synchronize the setting data.

1   Click "Option" > "Mirroring" > "Synchronize...".
The "Mirroring" window is displayed.

❶ Click   ❷ Click   ❸ Click

RS-AP3 - Default.rsap3*

File Group Access Point Option View Help

Automatic	
Save the Log	
MAC Authentication Server...	
Roaming Caching...	
Email...	
Mirroring >	Status...
Fault Log Timer... >	Options...
	Synchronize...

ÍCOM   **RS-AP3**
ACCESS POINT MANAGEMENT TOOL

New Group 01

New AP 01   New AP 02

Property

Group	
Model	AP-90M
Title	New Group 01
Background ...	
Zoom in/out ...	100
Access Point	
Display Name	New AP 02
IP Address	
Bitmap	AP-90Mbmp
X coordinate	**80**
Y coordinate	0

2   Select the synchronizing method, and then click [OK].
"Synchronizing settings. Wait a moment." is displayed.

Mirroring   ×

❶ ◉ Synchronize by sending the configuration
    ☐ Save Primary and Secondary after synchronization
❷ ○ Synchronize by receiving the configuration

OK   Cancel

❶ Select

❷ Click
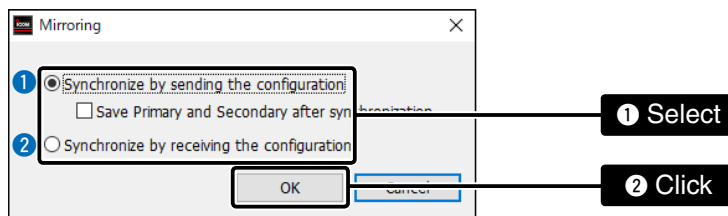
❶ **Synchronize by sending the configuration**
To send the setting data modified in the local host to the remote host to synchronize them, the previous setting data is overwritten.

RS-AP3
Primary

192.168.0.100

HUB

RS-AP3
Secondary
192.168.0.200

Wireless access point
(Example: AP-90M)

(Local host)

The USB flash drive must be inserted when synchronizing with the mirroring function.
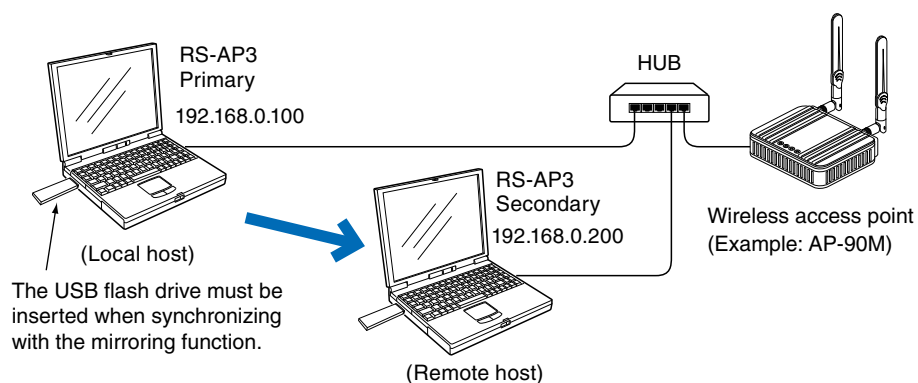
(Remote host)

☞ (Continued on the next page)

2. To prevent the management inability (Continued)

Synchronizing the setting data (Continued)

2

❶ Select

❷ Click
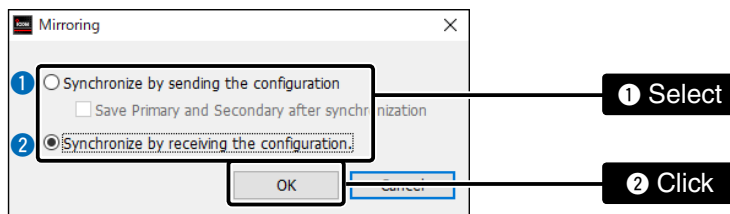
❷ **Synchronize by receiving the configuration**
The local host receives setting data saved on the remote host and synchronizes.
• When this method is selected, the setting data is not overwritten.

RS-AP3
Primary

192.168.0.100

(Local host)

The USB flash drive must be
inserted when synchronizing
with the mirroring function.

RS-AP3
Secondary

192.168.0.200

(Remote host)

HUB

Wireless access point
(Example: AP-90M)
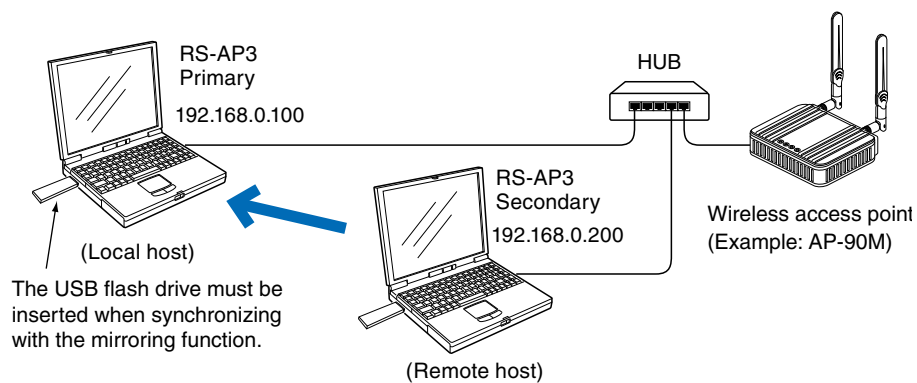
3   Check on the status bar as to whether or not the setting data is synchronized.
• "Synchronized" is also displayed on the remote host.

Save   Unsynchronized

Save   Synchronized

6 INFORMATION

2. To prevent the management inability (Continued)

Causes and counterplans for error messages

Cause: The USB flash drive is not inserted into the local host.
Counterplan: Insert the USB flash drive, and click [Retry].
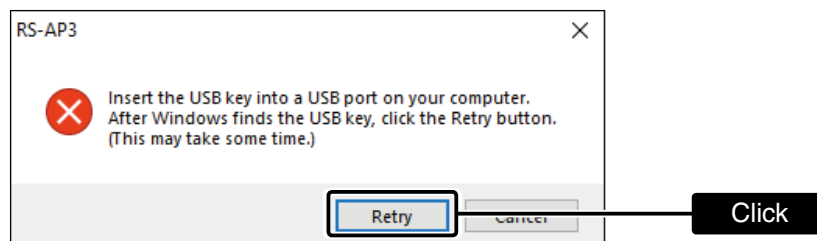
Cause: The Mirroring function is not set correctly.
Counterplan: Click [OK] to check the settings on the "Mirroring Option" screen (☞p.6-8) and then try to synchronize again.
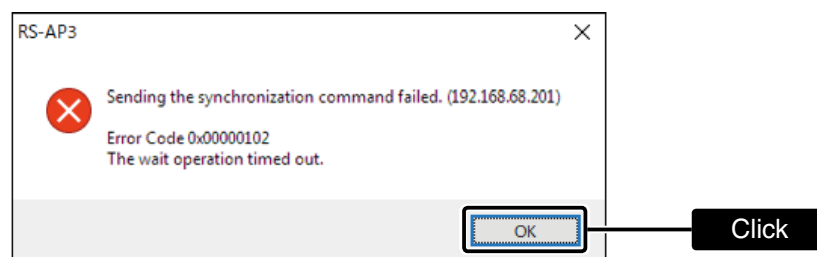
2. To prevent the management inability (Continued)

Checking the unsynchronized settings

1 Double-click "Synchronized/Unsynchronized" on the status bar.
The "Mirroring Status" screen is displayed.

Save | Unsynchronized |—————— Double-click
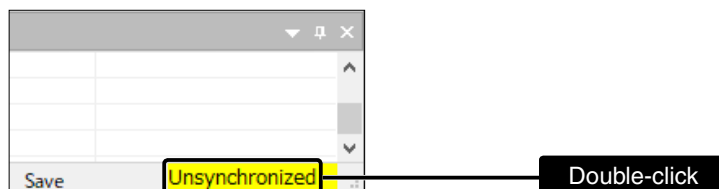
2 Check the settings that are not yet synchronized.
The unsynchronized settings have a pink background.

Mirroring Status ✕

	Local Host (192.168.25.244)	Remote Host (192.168.25.100)
Connection Status	-	Connected
Version		
License	#11	#11
Priority	Primary	Secondary
Configuration	-	Mismatch

—————— Check

This shows that there is a mismatch with the setting data on the remote host.
• "Unsynchronized" is displayed on the screen in step 1, when the setting data is saved on the local host after modifying the access point settings.

3 Close the "Mirroring Status" screen to send the setting data to the remote host, and then start synchronization. (☞p.6-10)
The status display will change to "Synchronized."

Save | Synchronized |—————— Double-click

Mirroring Status ✕

	Local Host (192.168.25.244)	Remote Host (192.168.25.100)
Connection Status	-	Connected
Version		
License	#11	#11
Priority	Primary	Secondary
Configuration	-	Match
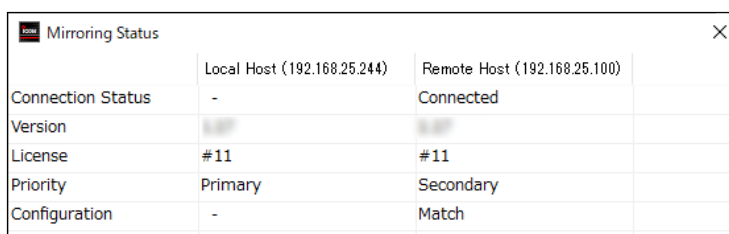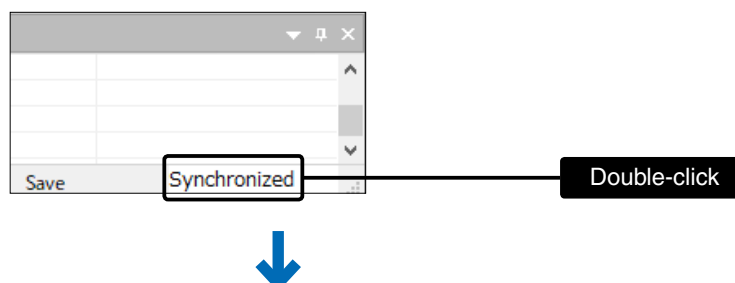
3. Background bitmap setting

Save the desired bitmap formatted (24 bit) image file in the "BG" folder that is located in the same location as the RS-AP3.
Example: Setting "room.bmp" as the background bitmap.

1   Save "room.bmp" in the RS-AP3's "BG" folder.
The "BG" folder is located in "Icom" > "RS-AP3" in the RS-AP3 installation folder.

2   Start the RS-AP3.

3   Select the group to set the background.
Click "▼" and select "room.bmp" from the displayed image file list.
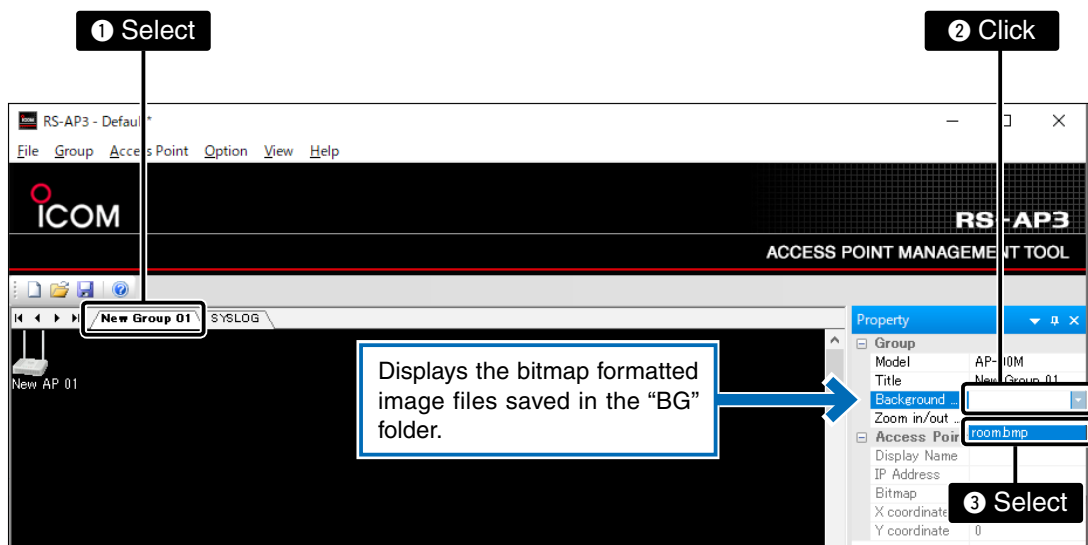
4   Click "Zoom in/out" to adjust the background size between 50 % and 300 %.
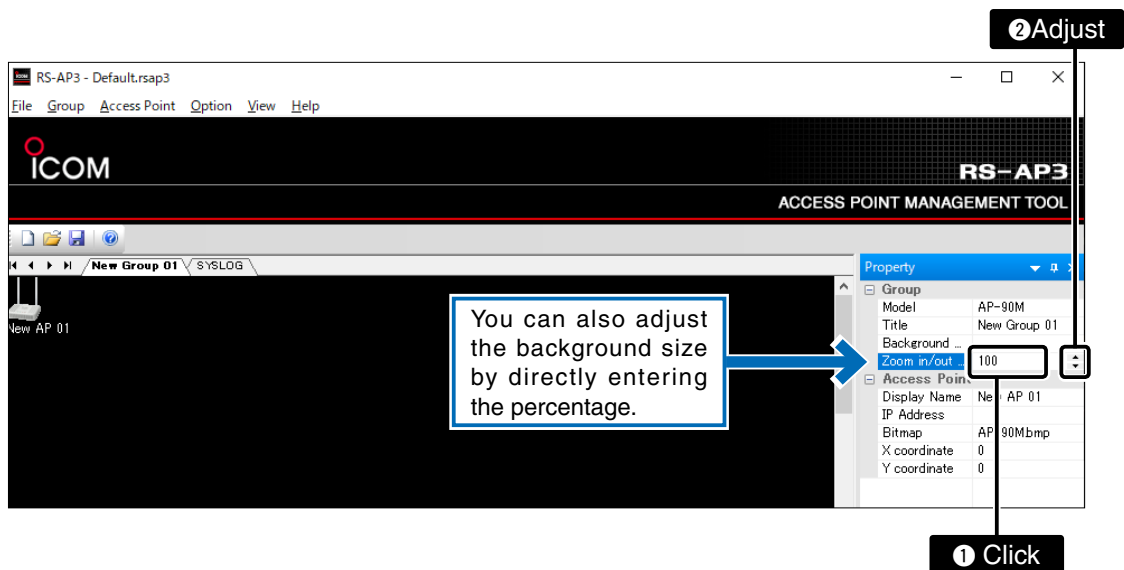
4. Firewall setting

RS-AP3 communication may be blocked by your firewall.
When the communication is blocked, enable the protocol and the port number used for the communication to unblock and proceed the communication.
• Refer to the instruction manual of your firewall software used for its setting details.

Administrator's PC		Managed wireless access points
To UDP 9991		From UDP 9991
To UDP 9992		From UDP random
From UDP 9992		To UDP random
To UDP 9993		From UDP random
From UDP 9993		To UDP random
To UDP 9994		From UDP random
From UDP 9994		To UDP random
To TCP 9994		From TCP random
From TCP 9994		To TCP random
From TCP random		To TCP 9995
To TCP random		From TCP 9995
To UDP 9995		From UDP random (multicast: 239.0.99.95)
To UDP 9995		From UDP 9995
ICMP		
		ICMP

UDP 9992/9993/9994, TCP 9994/9995: Transmitting and receiving
UDP 9991, UDP 9995: Receiving
TCP 9995: Also used with the mirroring setting synchronization
UDP 9995/ICMP: Also used with the mirroring function

Illustration: Transmitting and destination of TCP, UDP

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How the World Communicates

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