Mesh Network System BR-400AN Installation Manual



WA105350XD

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1 INTRODUCTION

This document describes the initial configuration and installation methods for BR-400AN.

BR-400AN can configure the Mesh type wireless network (hereinafter, "Mesh network"). Wired and wireless network devices can join the Mesh network and they can communicate with each other.

In this document, configuration and installation methods are explained in the following order.

Please see each chapter for details.



2 LAYOUT

2.1 Preparing Floor Plan Image

Please prepare the floor plan image of the floor where BR-400AN units are to be installed, which meets the following conditions.

- (1) The scale is clearly indicated, or approximate distance / area can be confirmed.
- (2) The spot of connection to the backbone network is specifically located.
- (3) The location of electrical outlet can be identified.



* If you can create an image file of the floor plan using a scanner or camera, you can open it on Windows and use it as the background image. By using the floor plan image on Mesh Monitor, accurate management of each unit location is possible. For how to use the floor plan image as the background image on Mesh Monitor, refer to **Papendix 5.6**.

2.2 Determination of Unit Locations

First of all, allocate the BR-400AN unit that connects to the backbone network, and then allocate other units by keeping 15-20m interval starting from the first unit. Make sure that each unit is allocated within a distance of 15-20m from the other one so that radio signals can reach.



* When multiple BR-400AN units are connected to the backbone network via wired LAN, they have to be connected to the same subnetwork to configure the Mesh network.

* When you connect a part of BR-400AN units to a different subnetwork via wired LAN, please separate them as a different Mesh network group.

- * If there is a wall between the BR-400AN units, the radio signals may be blocked. In such a case, install another BR-400AN unit to use as a relay terminal to give an alternative path for the radio signals. Remember that the relay terminal also needs to be located within 15m distance from the units.
- For the layout and configuration sample, see **Appendix 5.5** and **Appendix 5.2**.
- For the radio characteristics and how to fix BR-400AN unit, refer to **Appendix 5.4**.

2.3 Necessary Items

Prepare the necessary quantity of BR-400AN units by reading the instructions on the previous chapter. It is recommended to have some extra units in case of emergency or unexpected trouble.

<Package contents >

- AC adapter (length of DC cable is 1.75m)
- Wall-mounting Bracket (Type VI), Wall-mounting screw (4), Board anchor(4)
- Network cable (1.5m)

For the configuration, a Windows PC is required. The requirement is as follows.

Notebook PC and LAN Cable	Laptop with a LAN port Windows 8.1 or Windows 10
Necessary Utility	Configuration utility "AMC Manager®" and the plugin utility "Mesh Monitor"
Note	To use AMC Manager®, a license key needs to be purchased. For details, please contact out customer support center. For details on how to install and use AMC Manager® or Mesh Monitor, please refer to the user's manuals of these utilities.

* This installation manual is prepared for the users who are in need of efficient installation and configuration to use several BR-400AN units. For this purpose, this document assumes that user have AMC Manager® and Mesh Monitor for unified management of the products. When you do not have these utilities, please refer to the setup guide and user's manual of BR-400AN.

3 CONFIGURATION

3.1 Determination of Configuration

Points:

- (1) **Network Loop Avoidance** should be set to **ENABLE** on the BR-400AN unit which connects to the backbone network. For other units, set it to **DISABLE**.
- (2) When several Mesh groups are configured, use a different Mesh group and channel for each.
- (3) The wireless setting (SSID, authentication setting) can be the same even for above case.

Determine the product setting according to the installation plans of previous chapter. The below table shows the setting items that the users need to determine.

Setting	Sample Setting	Description			
Password	root	1-15 character string			
Mesh Group Name	SampleMeshID01	1-32 character string			
		If the Mesh network is established across the floors,			
		set a different group name for each.			
Mesh Encryption	Eeq27182818	1-32 character string			
Кеу					
Channel	Ch 44	Determine the channel according to your environment.			
		(了Appendix 5.3 Wireless Channel Selection)			
		When several Mesh networks are established, it is			
		recommended to set a different channel for each.			
Access Point	Enable	When this setting is enabled, BR-400AN can be used			
Function		as Access Point.			
SSID	SampleUserWLAN	1-32 character string			
Network	WPA2-PSK, AES	It is recommended to use the default setting.			
Authentication		(WPA2-PSK AES)			
Pre-Shared Key	Pleq3141593	Set a unique password.			

Hereinafter, this document uses the sample configuration above to explain the configuration method.

* When connecting BR-400AN with the firmware version 2.0.0 or lower, execute either of the following configurations.

- Update the older version of BR-400AN to the latest version. Make sure that all BR-400AN units have the same setting for **Route Switching Mode** and **Transmission Control Function**, then.
- When different versions of BR-400AN units are used together, make sure that **Route Switching Mode** is set to **Responsive Type** for all BR-400AN units with the firmware version 2.0.0 or higher.

3.2 Configuration File

Use AMC Manager® to create the configuration file to write.

*When the login password is not set to BR-400AN, please include that setting to the configuration file. If the login password is not set, the bulk configuration does not perform correctly.

* To configure multiple Mesh groups, repeat 1-5 as many times as the number of groups.

1. From the menu of AMC Manager®, click Settings - Create Configuration File - Create from Template. Select a template file for BR-400AN and click OK.



*The template to select will vary depending on the firmware version of BR-400AN.

- When the version is 2.0.0 or higher: Select **BR-400AN Ver2.0.0**.
- When the version is 2.0.0 or lower: Select **BR-400AN**.

In this document, **BR-400AN Ver2.0.0** is used as an example.

2. Check the check boxes of the settings to configure and edit the settings. (See the table in the next page for reference.) When the edit is finished, click **Save**.

	8	
System Configuration Network Configuration	Select All 8= Clear All	Contents
Wired LAN Configuration Wireless LAN Configuration	Traffic Loop Avoidance	Disable
Wireless LAN I/F 1	Access Point Function	Enable SampleMechID01
Wireless LAN I/F 2	Mesh Encryption Key	******
others	Route Refresh Method	Lite Refresh Mode
	Route Refresh Interval	3600
	Max Hop Count	No Limit
	Route Refresh Function	Enable
	Route Switching Mode	Stable Type
	Transmission Control Function	Enable

* Only the setting whose check box is checked will be saved.

Settings of cor	figuration file	Somple Sotting	Description	
Category	Name	Sample Setting	Description	
System	Password	root	Password for BR-400AN	
Configuration				
Wireless LAN	Mesh Group Name	SampleMeshID01	Mesh group name	
I/F 1	Mesh Encryption	Eeq27182818	Mesh group password	
	Key			
	Traffic Loop	Disable (when not	Enable this when BR-400AN is	
	Avoidance	connected to backbone	connected to the backbone	
		network)	network.	
	Access Point	Enable	This is enabled by default. When	
	Function		you do no use the AP function,	
			disable it in the configuration file.	
Wireless LAN	SSID	SampleUserWLAN	SSID for Wi-Fi	
I/F 2	Network	WPA2-PSK	Authentication method for Wi-Fi	
	Authentication			
	Encryption Mode	AES	Encryption mode (WPA,WPA2)	
	Pre-Shared Key	Pleq3141593		

* For other settings of BR-400AN, refer to Appendix 5.2.

3. When the **Save Configuration File** dialog is displayed, specify the file name and click **Save**. This time, the file name is set to "SampleMesh01-STD" as example.

Save Configuration	n File				×
← → ↑ ▲	→ This PC → Desktop → silex	√ Ū	Search silex		Q
Organize 🔻 New	w folder				?
🖈 Quick access	Name	Date	Туре		Size
ineDrive 🍊					
💻 This PC					
network					
	<				>
File <u>n</u> ame:	SampleMesh01-STD				\sim
Save as <u>t</u> ype:	Configuration File (*.cfg)				\sim
∧ Hide Folders			<u>S</u> ave	Cancel	

4. Based on the configuration file saved at **3**, create the configuration file for the BR-400AN unit that connects to the backbone network.

From the menu, click **Setting** - **Create Configuration File** - **Edit Existing File** and open the configuration file "SampleMesh01-STD.cfg" that you have created.



5. Enable the traffic loop avoidance setting for the BR-400AN that connects to the backbone network, and click **Save As**. This time, the file name is set to "SampleMesh01-BC" as example. The configuration file has been created.

Settings of co	nfiguration file	Sample Sotting	Description						
Category Name		Sample Setting	Description						
Wireless	Traffic Loop	Enable (when connected	When the BR-400AN unit is						
LAN I/F 1	Avoidance	to the backbone network)	connected to the backbone						
			network, enable this setting.						



* Please keep the created configuration file safe. The file is a record of configuration.

3.3 Configuration Write

The following explains the method of bulk configuration using the configuration file.

1. Put all BR-400AN units on one place and connect a PC to one of them using a network cable. Turn on all units.

* When there are many BR-400AN units to configure, prepare the power strip. Or divide them into small groups (8 units or so) and then configure by each group.

2. Check that the BR-400AN units are displayed on the device list of AMC Manager® and select all of them. From the menu, click **Settings - Bulk Configuration**.



3. Select the units to configure in bulk and click **Select Config. File** to select the configuration file to write.

onfiguration List:					
Device Name	Ethernet Address	Host Name	IP Address	New I	Add Device
🛾 🔒 BR-400AN	84:25:3F:01:09:E8	SX0109E8	172.25.72.251		Delete Device
🔒 🔒 🔒 🔒 🔒 🔒 🔒 🔒 🔒	84:25:3F:01:09:FD	SX0109FD	172.25.72.87		Delete Device
🗌 🕞 BR-400AN	84:25:3F:3A:8A:D7	SX3A8AD7	172.25.72.44		<u>E</u> dit Device
					Select Config. <u>F</u> ile
					Open <u>C</u> onfig. File
					IP Configuration
					Merge Config. File
					Show Config. List
					Open Bulk Config. File.
					0.000.000

4. Check the check boxes of BR-400AN units to configure in bulk and click **Start**. When the password entry dialog is displayed, enter the default password (**root**).

		Bulk Configuration			×
Enter Darsword	~	The device ha	is been configured.		
Enter the password to connect to the device blow Device Name: BR-400AN Ethernet Address: 84:25:3F:01:09:E8 Password: OK Car	w.	Device Name ✓ BR-400AN ✓ BR-400AN ✓ BR-400AN	Ethernet Address 84:25:3F:01:09:E8 84:25:3F:01:09:FD 84:25:3F:3A:8A:D7	Status Completed Completed Completed	
				<u>D</u> etails	<u>C</u> lose

- For configuration under the environment where DHCP is not installed, refer to Appendix 5.1
 Bulk IP Address Configuration.
- * Do not check the check box of **Restart the device after this configuration**.
- * Make sure to keep the record of which configuration file is used for each unit by pasting the post-it, etc. to each unit.

4 INSTALLATION

4.1 **Product Installation**

Allocate the BR-400AN units according to the location you have determined. First, allocate the BR-400AN unit which connects to the backbone network (1), and then allocate the other units (2)(3)(4)(5). Each time when you allocate the unit, check the radio signal status (refer to 4.1.2).



4.1.1 Installation to Backbone Network

Connect BR-400AN to the backbone network using a network cable and turn on it. If the sample configuration of previous chapter is used, install the unit of "SampleMesh01-BC".

* When two or more BR-400AN units are connected to the backbone network, install one of them first to use it as the start point.

4.1.2 Installation of Others

Install the BR-400AN units starting from the one closer to the unit that connects to the backbone network. If the sample configuration of previous chapter is used, install the unit of "SampleMesh01-STD". Before you drill the wall to mount the unit, check the radio signal status by looking at the LED on top of the unit. Repeat (1)-(3) below as many times as the number of units.

- Check 1 Allocate BR-400AN to the determined position and turn on it.
- Check 2 Check the LED status on top of the unit in 1-2 mins. Check that WLAN LED turns on and STATUS LED blinks green.
- Check 3 Turn off the unit, fix it to the location and then turn on it again.



- * When BR-400AN configures the multiple routes, the LED light pattern will differ depending on the average quality of radio signal status on each route.
- * If the WLAN LED blinks, it means that the BR-400AN unit has failed to join the existing Mesh network. Adjust the location or direction of installation or otherwise install another unit to use it as a relay device to expand the wireless distance.
- * For notes on installation location, refer to (**Appendix 5.4**.
- * To check the radio signal status using the LED, the firmware must be version 1.1.0 or later.
- If the firmware version is older than it, the LED blinks green regardless of the radio signal quality.
- * If the POWER LED and the STATUS LED blink red together, some BR-400AN units have a different setting for **Route Switching Mode** or **Transmission Control Function**.

4.2 Operation Check

Use Mesh Monitor to see if the information can be retrieved from the installed BR-400AN units.

Route status check using Mesh Monitor

The Mesh route of the installed units can be checked using Mesh Monitor.

Check that the installed units are turned on and the Mesh route is established for each unit.



* For how to use Mesh Monitor, refer to Appendix 5.6 Basic Use of Mesh Monitor.

5 APPENDIX

5.1 Bulk IP Address Configuration (When DHCP is Not Installed)

When BR-400AN does not have a fixed IP address and is turned on in the environment where DHCP is not installed, BR-400AN starts with a Link Local Address. BR-400AN can be used with the Link Local Address, but usually, the fixed IP address is configured in many cases.

The following explains the bulk configuration of IP address using the below setting.

Name	Sample Setting	
IP Address	192.168.1.101-	Prepare the valid IP address. Assign the sequential addresses as
	192.168.1.124	many as the number of BR-400AN units.
Netmask	255.255.255.0	Contact your network administrator.
Default Gateway	192.168.1.254	Contact your network administrator.

(1) Connection

The bulk configuration of IP address can be used for initial configuration. Connect a laptop to one of the BR-400AN units to configure.

*For bulk configuration of IP address, a password needs to be registered to BR-400AN in advance.

* IP address of the laptop needs to be changed beforehand.

- For bulk IP address configuration:

Change the IP address of the laptop to the one that can be communicated with BR-400AN units after the bulk configuration.

Sample IP address setting	Sample IP address setting		
for bulk configuration	for PC		
192.168.0.10 - 192.168.0.30	192.168.0.100		
172.25.10.10 - 172.25.10.25	172.25.10.100		

- For initial configuration without the bulk IP address configuration:

Set the Link Local Address for the IP address of the laptop.

* Link Local Address is the address that is defined as "169.254.x.x". When DHCP is not installed, it may take 2 mins or longer until the Link Local Address is assigned to the laptop and the communication is

established with BR-400AN after the laptop is connected to the network. The IP address of the laptop can easily be identified by executing the IPCONFIG command at the command prompt.

(2) Search

Start AMC Manager® and search for the BR-400AN units.

When the BR-400AN units are displayed in the list, select the units to change the IP address and click **Settings - Bulk Configuration**.

(3) Bulk Configuration

In the **Bulk Configuration** window, click **IP Configuration**. When the IP address configuration dialog is displayed, enter the setting. For details on each setting, refer to the list of configuration items in the appendix.

Bulk Configuration Change configuration for multiple devices in bulk. Specify the configuration file and click [Start] to start bulk configuration.							
ss	Host Name	IP Address	New IP Address	Configuration File Name	Add Device	IP Address Configuration	×
38 D D7	SX0109E8 SX0109FD SX3A8AD7	172.25.72.251 172.25.72.87 172.25.72.44			Delete Device Edit Device Select Config. Eile Open Config. File IP Configuration Merge Config. File Show Config. Litt	Start IP Address: End IP Address: Number of Steps: Subnet <u>M</u> ask: Default Gateway:	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$
< <u>R</u> est	art the device after thi	is configuration		>	Qpen Bulk Config. File Save <u>B</u> ulk Config. File Start		OK Cancel

After **OK** is clicked in the IP address configuration window, IP address is pre-assigned and displayed under **New IP Address** in the list. Click **Start** when they are correct. The progress bar is displayed when the IP address configuration is in progress and the result of configuration is displayed when it is completed. Click **Close** then.

Bulk Con	figuration Change configuration Specify the configura	n for multiple devices ir stion file and click [Start	1 bulk.] to start bulk configurat	ion.	×				
Configu	uration <u>L</u> ist:					Bulk Configuration			×
55 18 10 D7	Host Name SX0109E8 SX0109FD SX3A8AD7	IP Address 172.25.72.251 172.25.72.87 172.25.72.44	New IP Address 172.25.72.100 172.25.72.101 172.25.72.102	Configuration File Name	Add Device <u>Delete Device</u> <u>Edit Device</u> Select Config. Eile Open Config. File <u>IP Configuration</u> <u>Merge Config. File</u> Show Config. List	Device Name SR-400AN SR-400AN SR-400AN	as been configured. Ethernet Address 842537-01:09E8 842537-01:09FD 842537-34:84:D7	Status Completed Completed Completed	
< <u> R</u> est	art the device after thi	is configuration		>	<u>O</u> pen Bulk Config. File Save <u>B</u> ulk Config. File <u>S</u> tart			Details	Close

(4) Restart

To take effect of the new IP address, restart BR-400AN using AMC Manager®.

Select the BR-400AN units from the list and click **Settings** - **Restart** from the menu. The device restart window is displayed.

Check that the device status is 'Waiting' and click **Restart**. When the result of restart is displayed, click **Close**.

Restart Device		Х	Restart Device			×
Click [Restart]] to restart the device.		The device ha	as been restarted.		
Device Name	Ethernet Address 84:25:3F:01:09:E8 84:25:3F:01:09:FD 84:25:3F:3A:8A:D7	Status Waiting Waiting Waiting	Device Name BR-400AN BR-400AN BR-400AN	Ethernet Address 84:25:3F:01:09:E8 84:25:3F:01:09:FD 84:25:3F:3A:8A:D7	Status Completed Completed Completed	
		<u>R</u> estart <u>C</u> lose				<u>C</u> lose

* When the password entry screen is displayed, enter the password (the default password: root).

The bulk IP address configuration is completed.

Check that the BR-400AN units can be discovered from AMC Manager®. Change the IP address of the PC if necessary, when the PC does not have the IP address communicable to the BR-400AN units.

5.2 List of Configuration Items

AMC Manager® can configure the following settings.

Contents of configu	ration file	Sample Setting	Note
Category	Name		
System Configuration	Password	root	Set the password for BR-400AN. This is used when BR-400AN is configured via Web browser or by using AMC Manager®.
	Host Name	SX-MESH-001	This host name is displayed on AMC Manager® and Mesh Monitor.
Network Configuration	IP Address	192.168.1.101	
	Subnet Mask	255.255.255.0	
	Default Gateway	192.168.1.254	
	DHCP Client	Disable	Enable this setting to automatically configure the IP address using DHCP server.
	DNS Server (Primary)	192.168.33.44	Set the DNS primary server address.
	DNS Server (Secondary)	192.168.55.66	Set the DNS secondary server address.
	Local Time Zone	+9:00	Set the local time zone.
	NTP Client	Disable	Set whether to enable the NTP protocol.
	NTP Server Address	0.0.0.0	Set the domain name or IP address of the NTP server to retrieve the time information from.
Wired LAN Configuration	Link Mode	AUTO	Set the physical network type.
Wireless LAN Configuration	Channel Bandwidth	20Mhz	Set the frequency bandwidth. When the wireless mode is 802.11n/b/g or 802.11n/a, this setting needs to be configured.
	Extended Channel	Lower	Set the selection method for the extended channel.
	DFS Primary Channel (W53)	52	Set the destination channel to switch into when radar signals are detected at W53.
	DFS Primary Channel (W56)	100	Set the destination channel to switch into when radar signals are detected at W56.
	Use DFS Band	Disable	When this setting is enabled, DFS band channels can be used.
	Wireless Mode	802.11n/a	Set the type of IEEE 802.11 wireless standard.
	Channel(2.4GHz)	11	
	Channel(5GHz)	40	
	TX Power	100%	Set the transmission power of wireless LAN. If a larger value is set, the transmission power becomes

			stronger.
Wireless LAN I/F 1	Traffic Loop Avoidance	Disable	Enable this setting when BR-400AN is connected to the backbone network. Disable this for others.
	Access Point Function	Enable	Enable/Disable the Access Point function.
	Mesh Group Name	SampleMeshID01	Mesh group name
	Mesh Encryption Key	Eeq27182818	Mesh group password
	Route Refresh Mode	Lite Refresh Mode	Refresh method for the Mesh route
	Route Refresh Interval	3600	Refresh interval for the Mesh route
	Max Hop Count	No Limit	Set the total number of BR-400AN units to pass through to create the Mesh route.
	Route Refresh Function	Enable	Enable/Disable the regular optimization of the Mesh route.
	Route switching mode	Stable Type	Set the refresh method for the Mesh route optimization. Responsive Type: Always refreshes the route when the optimization is performed. Stable Type: Refreshes the route when the optimization is performed and the communication quality is good. *When the firmware version of BR-400AN is 1.4.1 or lower, BR-400AN operates as Responsive Type.
			*When the firmware version of BR-400AN is 2.0.0 or higher, BR-400AN can operate as Responsive Type or Stable Type.
	Transmission control function	Enable	Enable/Disable the function to allow effective use of communication route by creating the upper limit on amount of data transmission according to the route quality.
			*When the route refresh interval is long, or when the route quality frequently changes in the Mesh network, this function may not work effectively.
			*This setting is available when the firmware version of BR-400AN is 2.0.0 or higher.
			[^] I his function works when the route switching mode is Stable Type.
Wireless LAN I/F 2	SSID	SampleUserWLAN	SSID for Wi-Fi
	Network Authentication	WPA2-PSK	Authentication method for Wi-Fi

	WEP	Disable	Enable/Disable the encryption mode (WEP)
	WEP Key Index	1	Set the WEP key number (1-4) to use.
	WEP Key(1)-WEP Key (4)	Kysyt	
	Encryption Mode	AES	Encryption mode (WPA,WPA2)
	Pre-Shared Key	Pleq3141593	Set the pre-shared key to use for WPA,WPA2-PSK.
	Group Key Renew Interval	60	Set the refresh interval for the encryption key (min).
	Stealth Mode	Disable	Enable/Disable the stealth mode.
	Filter Type	Allow	Set the security type of the MAC address filter. Allow: Allows communication only from the registered MAC address. Deny: Allows any communications except for communication from the registered MAC address.
	Ethernet Address(1)-(1024)	00:11:22:33:44:55	Registers the MAC address to filter.
	Server IP	172.11.22.33	Specify the RADIUS server address.
	Authentication Port	1812	
	Shard Secret	RADIUSKEY01	
Others	Time before turning into Configuration Mode	6	Set the period of time until the configuration mode turns on after the push switch is pressed.

* For details on each configuration item, refer to "BR-400AN User's Manual".

5.3 Wireless Channel Selection



1ch 2ch 3ch 4ch 5ch 6ch 7ch 8ch 9ch 10ch 11ch 12ch 13ch



Channel	Indoor use	Outdoor use	Note
2.4GHz (all channels)	Supported	Supported	Be careful NOT to interfere with adjacent channels when 2.4GHz is used.
			See above image for reference. (e.g. 1ch, 6ch, 11ch)
5GHz (W52)	Supported	Not supported	It is recommended to use W52 when BR-400AN is used indoor.
5GHz (W53)	Supported	Not supported	This is DFS band. See the notes on use below (*).
5GHz (W56)	Supported	Supported	This is DFS band. See the notes on use below (*).

* Keep a distance from microwave ovens, Bluetooth devices, cordless phones, etc., as 2.4GHz radio signals will interfere with them.

* The wireless products that use the DFS band (W53, W56) are required to avoid interference with weather radar, etc.. When radar signals are detected, BR-400AN needs to release its channel and use a different channel. As this process takes about 1 minute, communication is lost then.

* BR-400AN has the following restrictions on use of the DFS band.

- If radar signals are detected again during the radar monitoring period (1min) that comes after radar signals are detected when BR-400AN is started or operating, BR-400AN may not be able to join the network of adjacent MP/MAP.

- If BR-400AN is restarted after it has detected radar signals and switched the channel, BR-400AN starts with the pre-configured channel NOT with the channel it switched. If the channel is different from the adjacent MP/MAP, BR-400AN will not be able to join the same network.

5.4 How to Fix BR-400AN

When BR-400AN is mounted on a wall

Use the brackets that come with BR-400AN when mounting it on the wall. For installation method, refer to the contained guide "Wall-Mounting Bracket Type VI Installation". As BR-400AN emits radio signals, BR-400AN needs to be installed on a higher position, making the top surface of BR-400AN (the surface with a Silex logo) face towards the destination device (as shown in the image on the right). The height should be about 2m from the ground.



When BR-400AN is placed on a table

Be careful of the following points when BR-400AN is placed on the table.

- Make sure that top surface of BR-400AN (surface with Silex logo) faces upward.
- ② Prepare a nonmetallic table (wood table is good).
- ③ Set BR-400AN to a higher position as possible. Do not place it on the floor.

Do not place BR-400AN under the following conditions. It causes malfunction.

- Locations subject to vibration or shock Locations exposed to direct sunlight
- Wet places (kitchen, bathroom, etc.)
- Locations subject to vibration or shock Humid or dusty places

- Shaky, uneven or tilted surfaces

- Near heat sources such as heater, stove, etc.
- Objects that interfere or absorb radio signals (cordless phone, vase, aquarium, etc.)



Radio characteristics

BR-400AN emits the radio signal as below. Make sure that the top surface of BR-400AN faces the destination device.



5.5 Layout Sample

Sample1. SILEX TECHNOLOGY Corporate Headquarters

Mesh Group Name: silex01

Channel: 6ch

Traffic Loop Avoidance: The unit A, B that connect to the existing LAN...ON

Other than A,B...OFF

Only one Mesh network is established because wireless communication can be reached across the floors through the stairwell.

* 2 types of configuration files need to be created; the one enables the traffic loop avoidance and the other one disables it.



Sample 2. OO building

Mesh Group Name a:Group3F, Channel a:36ch Mesh Group Name b:Group2F, Channel b:40ch Mesh Group Name c:Group1F, Channel c:44ch Traffic Loop Avoidance: OFF for all * To make STA terminals communicate across the floors, set the same SSID, authentication method, encryption mode, encryption key to the units whose Access Point function is enabled. * If the Mesh network cannot be established across the

floors, a different Mesh group name needs to be configured for each floor. In this case, 3 types of configuration files need to be created using a different Mesh group name on each.



Sample 3. ∆∆ center

Mesh Group Name A:Room A, Channel a:36ch

Mesh Group Name b:Room B, Channel b:40ch

Traffic Loop Avoidance : OFF for all

* If the radio signals are hard to reach even on the same floor, a different Mesh group name needs to be set for each.

* To make STA terminals communicate across the rooms, set the same SSID, authentication method, encryption mode, encryption key to the units whose Access Point function is enabled.

* In this case, 2 types of configuration files need to be created using a different Mesh group name for each.



5.6 Basic Use of Mesh Monitor

The following explains how to check the Mesh network using Mesh Monitor.

1. Start AMC Manager® and click the icon **Start the plug-in tools** in the tool bar and choose **Start Mesh Monitor**.

🛃 AMC Manager					_		×
<u>File Edit Status Settings</u>	<u>[</u> ools <u>H</u> elp						
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Group	Device Name BR-400AN BR-400AN BR-400AN BR-400AN	Ethernet Address 84:25:3F:01:09:E8 84:25:3F:01:09:FD 84:25:3F:3A:8A:D7	Host Name SX010A6C9 SX0109FD SX3A8AD7	Start Survey Assistant Start Mesh Monitor Start Log Viewer 172.25.72.44 1.2.0	Activ Activ Activ	5 2 2	

2. Mesh Monitor will start.

Mark Marine		- 0	~
File Edit View Tools Help		- 0	
\$ 4 Q M & Q 4			
Roor Information	Detected D	evices	φ×
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Nexes and the floor			
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3. Click the icon **Add floor** to display the **Add Floor Information** window. Type a name of floor to create, click **Browse** to choose a background image file, and then click **OK**.

S Mesh Monitor	Ndd Floor Information	×
Eile Edit View Isols Help C V+ Image: Signature Image: Signature Image: Signature	<u>F</u> loor Name:	2nd Floor Map
Floor Information	Image File <u>P</u> ath:	C:\Users\silex\Desktop\silex\Flo
		OK Cancel

4. Drag and drop a Mesh device on the floor map from the device list.



5. Repeat **4** to allocate Mesh devices on the floor map. Every time when a Mesh device is allocated on the floor map, Mesh Monitor adds Mesh routes based on the information of that device.



- * Up to 32 Mesh devices can be allocated per floor.
- * For details on how to use Mesh Monitor, refer to "Mesh Monitor User's Manual".

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