# 802.11ah Wi-Fi HaLow™ Wireless Bridge BR-100AH

# **User's Manual**



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# **1.** Introduction

Thank you for purchasing the Wireless Bridge BR-100AH (hereinafter the "BR-100AH").

# 1-1. Introduction

This manual provides information on how to configure and use the BR-100AH. Please read the Safety Instructions carefully before you begin.

### Disclaimers

- The unauthorized transfer or copying of the content of this manual, in whole or in part, without prior written consent is expressly prohibited by law.
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- This manual was prepared to accurately match the content of each OS, but the actual information shown on the computer monitor may differ from the content of this manual due to future OS version upgrades, modifications, and other changes.
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# 1-2. Safety Instructions

This page provides the safety instructions for safe use of BR-100AH.

To ensure safe and proper use, please read the following information carefully before using BR-100AH. The safety instructions include important information on safe handling of BR-100AH and on general safety issues.

< Meaning of the warnings >

Warning	"Warning" indicates the existence of a hazard that could result in death or serious injury if the safety instruction is not observed.
Caution	"Caution" indicates the existence of a hazard that could result in serious injury or material damage if the safety instruction is not observed.

#### < Meaning of the symbols >

$\boldsymbol{\bigtriangleup}$	This symbol indicates the warning and caution. (Example: 🕂 "Danger of the electric shock")
$\bigcirc$	This symbol indicates the prohibited actions. (Example: 🛞 "Disassembly is prohibited")
	This symbol indicates the actions users are required to observe. ( Example: 🕵 "Remove the AC plug from an outlet" )

### Warning

	* Do not allow physical impact. When damaged, turn off the connected devices, unplug the AC plug
	of BR-100AH from a power outlet and contact your point of purchase. Failure to take this action
•	could cause fire or an electrical shock.
	* In the following cases, turn off the connected devices and unplug the AC plug of BR-100AH from
	a power outlet and contact your point of purchase. Failure to take this action could cause fire or an
	electrical shock.
14	
	* When BR-100AH emits a strange smell, smoke or sound or becomes too hot to touch.
	* When foreign objects (metal, liquid, etc.) gets into BR-100AH.
	* Keep the cords and cables away from children. It may cause an electrical shock or serious injury.
•	* If a ground wire is supplied with your device to use with, connect it to the ground terminal in order
	to prevent an electrical shock. Do not connect the ground wire to gas pipe, water pipe, lighting rod or
	telephone ground wire. It may cause malfunction.
	* Do not disassemble or modify BR-100AH. It may cause fire, electrical shock or malfunction.
	* Do not disassemble or modify the AC adaptor that came with BR-100AH. It may cause fire, electrical
	Shock or malfunction.
	* Do not place an object on the BR-100AH. In addition, please do not stack the BR-100AHs. It can cause
$\frown$	fire, electrical shock or damage.
$\sim$	* Do not cover the BR-100AH with a cloth. It can cause fire or damage of the BR-100AH by thermal failure.
	* Please stay away from the BR-100AH when lightning strikes are expected in case the BR-100AH is stored
	a lightning surge can damage the BR-100AH. Use a lightning surge protector to protect this product
	a instraining surge can admitige the bit room of our protector to protect this product.

	* Do not pull on the cord to disconnect the plug from the power supply. The code may be broken
0.5	which could result in fire or an electrical shock.
	* When removing BR-100AH, disconnect the AC plugs of both BR-100AH and the other devices yo
	are using with.
	* Use the AC adaptor supplied with BR-100AH. Other AC adaptors may cause malfunction.
	* Verify all codes or cables are plugged correctly before using BR-100AH.
	* When BR-100AH will not be used for a long time, unplug the power cables of BR-100AH and the
	other devices you are using with.
	* When installing it on a wall or in a high place, make sure that this product is securely fastened
	so that it does not fall by the stress from the cabling.
	* Consider using the electric surge protection on the Ethernet connector when the BR-100AH is
	used with a PoE injector.
	* Do not use or store BR-100AH under the following conditions. It may cause malfunction.
	- Locations subject to vibration or shock
	- Shaky, uneven or tilted surfaces
$\mathbf{\nabla}$	- Locations exposed to direct sunlight
	- Humid or dusty places
$\sim$	- Wet places (kitchen, bathroom, etc.)
	- Near a heater or stove
	- Locations subject to extreme changes in temperature
	- Near strong electromagnetic sources (magnet, radio, wireless device, etc.)

## 1-3. Product Information and Customer Services

### **Product Information**

The services below are available from the Silex Technology website. For details, please visit the Silex Technology website.

	URL	
USA / Europe https://www.silextechnology.com/	USA / Europe	https://www.silextechnology.com/

- Latest firmware download Latest software download
- Latest manual download

### **Customer Support Center**

Customer Support is available by e-mail or telephone for any problems that you may encounter. If you cannot find the relevant problem in this manual or on our website, or if the corrective procedure does not resolve the problem, please contact Silex Technology Customer Support.

Contact Information			
USA	+1-657-218-5199	support@silexamerica.com	
Europe	+49-2154-88967-0	support@silexeurope.com	



- Visit the Silex Technology website (https://www.silextechnology.com/) for the product information.



BR-100AH is the wireless bridge connecting a non-wireless device (10BASE-T/100BASE-TX network device) to 802.11ah wireless network. With sub-GHz radio, various non-wireless devices can easily be connected to a wide-range 802.11ah wireless network. The BR-100AH employs WPA3 Wi-Fi authentication to ensure safe and secure use of wireless communication at an office, factory, etc. where higher security is required. The BR-100AH is firmware upgradeable to enhance its feature.

### 2-1. Features

BR-100AH has the following features:

### Giving unlimited locations for your non-wireless devices

As you do not have to care about wiring conditions to establish your environment, the BR-100AH provides flexibility in the installation location. A network coverage greatly expands in any scene, such as healthcare facilities, offices, factories, schools, commercial facilities, etc. The radio interference with the existing 2.4GHz/5GHz Wi-Fi network is avoided by its sub-GHz radio while the devices are easily deployed into the existing IP network. Also, considerable installation cost reduction is expected as you will no longer have to pay for wiring construction.

### IEEE 802.11ah

BR-100AH supports communications at sub-GHz. 802.11ah provides a much longer range than 2.4GHz/5GHz, much more device connections per access point, radio interference avoidance with 2.4GHz/5GHz radios, and much better radio coverage due to better wall penetration and diffraction around obstacles.

### 802.1X Device Authentication to join Enterprise-grade secure IP network

The BR-100AH supports 802.1X authentication to access the network requiring the RADIUS server authentication. Paring the BR-100AH with the AP-100AH enables the seamless IT integration into existing network infrastructure.

### Advanced security

The following security features are supported:

- Enhanced Open (OWE, AES-128)
- WPA3-Personal (SAE, AES-128)
- -WPA3-Enterprise (TLS/TTLS/PEAP/FAST, AES-128)

### **Multiple Client Devices Support**

- The BR-100AH bridges one non-wireless device to 802.11ah wireless network through its Ethernet port.
- Up to 16 non-wireless devices can be bridged when connected to the BR-100AH through an Ethernet HUB.
- The BR-100AH uses its MAC address in the wireless network.

#### Firmware upgradeable device

- The BR-100AH support the firmware update to enhance its features. The firmware update is easy through its configuration web page or AMC Manager<sup>®</sup>.

#### Easy access to the Web configuration interface

Without changing the PC setup, the Web configuration interface of BR-100AH can easily be accessed.

#### IPv6 support

BR-100AH supports IPv6.

#### AMC Manager (non-free program)

BR-100AH supports the total management software, AMC Manager<sup>®</sup> version 4.0.0 and later. The AMC Manager<sup>®</sup> provides useful features, as follows:

- Remote device control and monitoring
- Bulk configuration and firmware updates
- System time synchronization (version 4.0.0 or later)



- To use the functions above, your Access Point or wireless router needs to support the same functions.
- For details on the "AMC Manager", please visit our homepage.

**Note** - To use the "AMC Manager", an IP address needs to be configured to the BR-100AH. - BR-100AH can be used in Infrastructure mode only. Ad hoc mode is not supported.

### 2-2. Parts and Functions

The parts name and functions are as follows:

#### Top



(1)	Wireless LAN Antenna	Antenna for wireless communication	
(2)	2) Power LED (Orange)* ON Powered on		Powered on
(2)	(2) Mireless LED (Vellew)*	ON	The BR-100AH has connected to an access point.
(3) WITEless LED (Yellow)	BLINK	Data communication is occurring.	
(4)	Wired LED (Green)*	ON	The BR-100AH has connected to a wired LAN.

\* All 3 LEDs (Power/Wireless/Wired LEDs) turn on when BR-100AH is started.

Then, Wireless/Wired LEDs turn off in 1 second, and start to run on/blink as described in the table.

### Front and Back



### Bottom



(10)	E/A1 (wired)	Ethernet Address of the wired LAN
(11)	E/A2 (wireless)	Ethernet Address of the wireless LAN
(12)	S/A	Serial Number

# 2-3. Hardware Specification

Operating environment	Temperature : 0 degrees to +40 degrees
	Humidity : 20% to 80%RH (Non-condensing)
Storage environment	Temperature : -20 degrees to +80 degrees
	Humidity : 20% to 90%RH (Non-condensing)
EMI	FCC Class B
	ICES Class B
Wired network interface	10BASE-T/100BASE-TX (Auto-sensing) :1 port
	Auto MDI/MDIX
Wireless network interface	IEEE 802.11ah
Channel	(US/CA): Unit MHz
	1MHz Bandwidth:
	903.5, 904.5, 905.5, 906.5, 907.5, 908.5, 909.5, 910.5, 911.5, 912.5, 913.5,
	914.5, 915.5, 916.5, 917.5, 918.5, 919.5, 920.5, 921.5, 922.5, 923.5, 924.5,
	925.5, 926.5
	2MHz Bandwidth:
	905, 907, 909, 911, 913, 915, 917, 919, 921, 923, 925
	4MHz Bandwidth:
	910, 914, 918, 922
Push Switch	1
LED	Top POWER (Orange)
	Wireless (Yellow)
	Wired (Green)
	LAN Port Status (Orange)
	Link (Yellow)
Compatible devices	Network devices with LAN port (RJ-45)
Maximum number of connectable devices	16 devices

### FCC / ISED Notice FCC

#### FCC Notice

#### BR-100AH

This device complies with Part 15 of FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Silex Technology America, Inc. 1751 E Garry Ave Santa Ana, CA 92705 USA Phone: 657-218-5199

#### FCC CAUTION

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

#### Contains FCC ID : N6C-SXNEWAH

#### FCC Rules Part 15 Subpart B

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be det ermined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures: - Reorient or relocate the receiving antenna.

- Increase the separation between the equipment and receiver. - Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

#### **RF** exposure compliance

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment and meets the FCC radio frequency (RF) Exposure Guidelines. This equipment should be installed and operated keeping the radiator at least 20cm or more away from person's body.

#### **Co-Location Rule**

This transmitter must not be co-located or operated in conjunction with any other antenna or transmitter.

#### Antennas

To prevent violation of the law, do not use antennas other than those provided or specified by Silex Technology.

#### **ISED Notice**

This device contains license-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's license-exempt RSS(s). Operation is subject to the following two conditions:

1. This device may not cause interference.

2. This device must accept any interference, including interference that may cause undesired operation of the device. L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

1. L'appareil ne doit pas produire de brouillage;

2. L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

#### Contains IC: 4908A-SXNEWAH

#### **RF** exposure considerations

This equipment complies with ISED radiation exposure limits set forth for an uncontrolled environment and meets RSS-102 of the ISED radio frequency (RF) Exposure rules.

This equipment should be installed and operated keeping the radiator at least 20cm or more away from person's body.

Cet équipement est conforme aux limites d'exposition aux rayonnements énoncées pour un environnement non contrôlé et respecte les règles d'exposition aux fréquences

radioélectriques (RF) CNR-102 de l'ISDE. Cet équipement doit être installé et utilisé en gardant une distance de 20 cm ou plus entre le radiateur et le corps humain.

#### Antenna Type

This radio transmitter (4908A-SXNEWAH) has been approved by Innovation, Science and Economic Development Canada to operate with the antenna types listed below, with the maximum permissible gain indicated. Antenna types not included in this list that have a gain greater than the maximum gain indicated for any type listed are strictly prohibited for use with this device.

Antenna type	Gain	Impedance
Rod Antenna	3.4dBi	50ohms

Le présent émetteur radio (4908A-SXNEWAH) a été approuvé par Innovation, Sciences et Développement économique Canada pour fonctionner avec les types d'antenne énumérés ci-dessous et ayant un gain admissible maximal. Les types d'antenne non inclus dans cette liste, et dont le gain est supérieur au gain maximal indiqué pour tout type figurant sur la liste, sont strictement interdits pour l'exploitation de l'émetteur.

Type d'antenne	Gain	l'impédance
Antenne à tige	3.4dBi	50ohms

## 2-4. Software Specification

TCP/IP	Network layer	ARP, IP, IPv6
	Transport layer	TCP, UDP
	Application layer	HTTP/HTTPS, TFTP, SNMP, DHCP (simple server function only), DHCPv6 and
		SX_SMP*
		* SX_SMP are the silex proprietary protocols.

- This bridges TCP/IP (IPv4, IPv6) only.

## 2-5. Use of Radio Waves

### Notes on Usage

### If there is reinforced metal between wireless devices, they may not connect.

BR-100AH can connect through wood or glass, but may have troubles connecting through reinforced metal.

### BR-100AHcomplies with the certification of conformance to technical standards. Please pay attention to the following points:

- Please do not disassemble or remodel the product. Such action is prohibited by law.
- Please do not remove the certificate label. Using the product without a label is prohibited.

### Wireless devices using sub-GHz band

- Before you use BR-100AH, check that it does not interfere with other devices.
- If interference occurs, stop using BR-100AH or change the wireless band. Please consider creating a wall between these devices to avoid interference. Contact us for possible solution.

### 2-6. Notes on Security

Because a wireless LAN uses electromagnetic signals instead of a network cable to establish communication with network devices, it has the advantage of allowing devices to connect to the network easily. However, a disadvantage of this is that within a certain range, the electromagnetic signals can pass through barriers such as walls, and if security countermeasures are not implemented in some way, problems such as the following may occur.

- Communication is intercepted by a third party
- Unauthorized access to the network
- Leakage of personal information (ID and Card information)
- Spoofing and the falsification of intercepted data
- System crashes and data corruption

Nowadays, wireless LAN cards or access points are equipped with security measures that address such security problems, so that you can enable security-related settings for wireless LAN products in order to reduce the likelihood of problems occurring. We recommend that you make yourself fully acquainted with the possible implications of what might happen if you use a wireless product without enabling security features, and that you configure security-related settings and use wireless products at your own responsibility.

# **3.** Before You Begin

This chapter explains two device connection topologies and available configuration methods for BR-100AH as well as the wireless setting information you need to check out before the configuration.

# 3-1. Device Connection Topology

BR-100AH supports two device connection topologies, one is direct connection with an Ethernet device and the other is connections with multiple Ethernet devices through Ethernet hub.



### Single Client Connection

Connect a single non-wireless device to the BR-100AH through the Ethernet port directly. The IP packet is bridged from the Ethernet device to the wireless network.



### **Multi-Client Connection**

Use this mode when you connect multiple non-wireless devices to BR-100AH. By using a HUB on the LAN port, up to 16 devices can be connected.



# 3-2. Configuration Method

There are two configuration methods as follows. Please select the one appropriate for your environment.

- Configuration using BR-100AH's configuration web page
- Configuration using AMC Manage®

### Configuration using BR-100AH's web page

In this configuration method, you connect the BR-100AH to a PC using a network cable to configure the BR-100AH from the PC.

By connecting the BR-100AH to the PC, the Web configuration interface can be accessed.





In this configuration method, only "**SSID**" and "**Network Key**" are needed to connect to a wireless LAN, however, further configuration is required in the following cases.

- Access Point is operating in a stealth mode.

### Configuration using AMC Manager®

The configuration by AMC Manager<sup>®</sup> is recommended when multiple BR-100AH units use the same configuration parameters, such as setting the same SSID and Pre-Shared secret of an access point. In this configuration method, you connect the BR-100AH to a PC using a network cable to configure the BR-100AH from the PC.

The AMC Manager<sup>®</sup> running on the PC automatically find the connected BR-100AH. The AMC Manager<sup>®</sup> allows users to generate a configuration file from the BR-100AH's template and load it to the BR-100AH units.

Depending on your environment, you may need to check the wireless LAN information beforehand.





In this configuration method, only "**SSID**" and "**Network Key**" are needed to connect to a wireless LAN, however, further configuration is required in the following cases.

- Access Point is operating in a stealth mode.



Roaming configuration is only available from the BR-100AH's web page.

Note

### 3-3. Necessary Wireless Setting Information

When you configure BR-100AH, the wireless settings need to be configured appropriately for your environment. As the same wireless settings must be configured for both BR-100AH and your Access Point, you need to get the necessary setting information of your Access Point beforehand.



- The wireless setting information explained in this page is specific to your network and cannot be provided by Silex technical support. For how to confirm each setting, please refer to the operation manual that came with your router or contact the manufacturer.
- If a security feature such as MAC Address filtering is enabled on your Access Point, change the setting so that BR-100AH can communicate with your Access Point. For details, refer to the operation manual that came with your Access Point.

SSID	The SSID is an ID that distinguishes a wireless LAN network from others.				
	For wireless devices to communicate with each other on a wireless network, they must share the same				
	SSID. (The SSID is also referred to as "ESSID".) Depending on your Access Point, it may have several				
	SSIDs. If there are different SSIDs for a game console and computer, use the one for the computer.				
Encryptior	No Encryption	Uses no encryption for wireless communication.			
Mode		(In this case, you do not have to get any of your settings beforehand.)			
	WPA3 Uses PSK for network authentication.				
		The encryption key will be generated by communicating with the Access Point			
		using a Pre-Shared secret. Set the same "Pre-Shared key" and			
		"Encryption Mode"(AES) as the wireless device you wish to connect. The Pre-Shared			
		secret is also referred to as "Network Key" or "Password".			

# **4.** How to Configure BR-100AH

This chapter explains how to configure BR-100AH.

Following configuration methods are available:

- 1) Configuration using BR-100AH's web page
- 2) Configuration using AMC Manager®



- For details on each configuration method, refer to **3-2. Configuration Method**.

Note

## 4-1. Configuration Using BR-100AH's Web Page

How to configure BR-100AH using the Configuration Mode is explained.

### Connecting BR-100AH to a computer

**1.** Connect BR-100AH and the PC (to use for setup) using a network cable.



2. Connect the AC adaptor to BR-100AH, and the AC adaptor's plug to an electrical outlet.



**3.** Confirm that the Power LED (orange: (2)) and the wired LED (green: (4)) are turned on.



### Configuration

**1.** Access to BR-100AH's web page. Launch a web browser on the PC and enter the IP address of BR-100AH in the address bar. The IP address of the BR-100AH's Ethernet port is "169.254.111.111".



To start the configuration, the PC and BR-100AH need to communicate each other properly.
Confirm that an IP Address is correctly configured to the PC.
If a static IP address is set to the Ethernet adapter of the PC, the Web configuration interface cannot be displayed in the following cases:

An IP address of the Ethernet adapter is set for a different subnet.
If the BR-100AH configuration web page does not appear, set the IP address of the Ethernet adapter of the PC connected with the BR-100AH as following:
IP Address: 169.254.111.1
Subnet Mask: 255.255.0.0

**2.** The login password configuration page appears for the first time web page access. Enter the password to configure for the BR-100AH and click **Submit**. Note that the BR-100AH accepts up to eight letters for the password.

■ <u>Welcome to BR-100AH</u>	_	
Please set a login password for this unit.		
	Password : Confirm Password : 8 letters[max.]	
Select Language : English 👻		Submit

**3.** Click **Login** from the left menu and enter the password. Then, click **Login**.

	<b>siloy</b>		
	technology	. Login	
	Select Language		
	▼ Status	Login	
	V Login	Authentication is required	
Ч	- Lügin	Please input the password	
	- silex Global Site	Password :	
			Losin
		-	
	BR-100AH		

**4.** In the Web configuration interface, click **Wireless LAN** from the left menu. Then, enter SSID of the access point and the network authentication method. When WPA3-Personal is selected, **WPA3 Configuration** section appears. Enter the Pre-Shared secret of the access point and click **Submit** when finished.

t e c h n o l o g y	II Wireless LAN Configuration
English 🗸	Wireless LAN Configuration
<ul> <li>Status</li> <li>System</li> </ul>	
Vetwork Conf.	l l l l l l l l l l l l l l l l l l l
- General - TCP/IP	
- Wireless LAN	Wireless LAN Basic Configuration     Name     Value
<ul> <li>Security</li> <li>Password</li> </ul>	
- IP Filter	Frame Aggregation OFF V
<ul> <li>Maintenance</li> <li>Restart</li> </ul>	Roaming OFF V
- Factory Default - Firmware Update	Network Authentication Open
– System Configuration – Logout	Expert Driver Options
- silex Global Site	Submit
BR-100AH	
silex	III Wireless LAN Configuration
Silex	II Wireless LAN Configuration
Silex technology Select Language English	II Wireless LAN Configuration
Select Language	III. Wireless LAN. Configuration
Select Language English V Status - System V Network Conf	Wireless LAN Configuration
Select Larguage Select Larguage English v Status - System Nature/ P	Wireless LAN Configuration
Silect larcuae English V Status - System V Metwork Confl - TGP/P - Wrefor LAN - Wrefors LAN	Wireless LAN Configuration      Wreless LAN Configuration      Wreless LAN Basic Configuration
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Select Lancuaze Execito Lancuaze Execito X - System - System	
Select Lancuaze English V System System System V Status V St	Image: State Stat
Science Service S	Image: State Stat
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Sector Default     Sector D	Image: State Stat
Select Lacuase     Enclish     Select Lacuase     System     System     System     System     Wireless LAN     Wreless LAN     Wreless LAN     Wreless LAN     Wreless LAN     Wreless LAN     System     Configuration     System Configuration     Logoxt     Support Obtails     System Configuration     Logoxt     Support Obtails     System Configuration     Logoxt     Support Obtails     System Configuration     Logoxt	
Select Lanuae     Lestin V      Select Lanuae     Control of the select se	
Site Character     Select Lancuse      English     Configure      Status     System     Select Lancuse      System     Second	Image: Stand Configuration         Wreless LAN Configuration         Image: Stand Basic Configuration         Name         SSD         SilexAH         Frame Agregation         OFF V         Rearing         Network Authentication         Expert Driver Options         Show Expert Driver Options         Show Expert Driver Options         Pre-Shared Key         Image: Driver Options
Since Series Conference Series	Image: Subscription of the second
Security Security Security Setup Security	Image: Stand Configuration         Wreless LAN Configuration         Image: Stand Stand Configuration         Name       Value         SSD       SilexAH         Frame Aggregation       OFF Image: Configuration         Network Automtication       WRAG-Personal Image: Configuration         Expert Driver Options       Show Expert Driver Options         Security Configuration       Value         Name       Value         Pre-Shared Key       Train
Select Lancuse     English     Select Lancuse     English     System     System     Vesters LAN     System     Control Configuration     System Configuration     System Configuration     System Configuration     System Configuration     Sustem Configuration     Sustem Configuration     System Configuration     Sustem Configurat	Image: Start Configuration           Wreless LAN Configuration           Image: Start Basic Configuration           Name         Value           SSD         SilevAH           From Agregation         CEF IM           Reminis         CEF IM           Network Authentication         WPA9-Personal IM           Expert Driver Options         Show Expert Driver Options           Scourity Configuration         Value           Pre-Shared Key         Image: Centre of the Options
Select Lancuse Exect Lancuse Exect Lancuse Select Lancuse Select Lancuse Select Lancuse Select Sele	



- For network key, usable characters will differ depending on the AP to connect.
- Please refer to **5-3. Roaming** for the roaming setting.
- For Pre-Shared secret, enter 8-63 characters. For details, refer to **Pre-Shared Key** at **A-1. List of All Settings**.

When WPA3-Enterprise is selected, additional configuration parameters appear as the table below.

Namo	I	EEE 802.1X Auth	entication Mod	e
Name	EAP-TLS	EAP-TTLS	PEAP	EAP-FAST <sup>*3</sup>
EAP User Name	Mandatory	Mandatory	Mandatory	Mandatory
EAP Password	-	Mandatory	Mandatory	Mandatory
Inner Authentication Method	-	Mandatory	_*2	-
CA Certificate	Optional <sup>*1</sup>	Optional <sup>*1</sup>	Optional <sup>*1</sup>	-
Client Certification	Mandatory	-	-	-
Client Certificate Password	Optional	-	-	-

\*1. CA certificate is required when the server certification is required for the RADIUS server authentication.

\*2. PEAP is PEAP-MSCHAPv2

\*3. EAP-FAST always operates with Automatic PAC provisioning.



- Enable Device Filter function through General configuration page when 802.1X authentication is used.

- 802.1X authentication together with the device filter ensures only autholized device(s) connect the enterprise network.



**5.** Click **Restart** and **Yes** to restart the BR-100AH. The configuration set in the step 4 takes effect only after the BR-100AH is restarted.



When you wish to bridge the PC used for this configuration wirelessly, restart the PC. To bridge another device wirelessly, turn off both BR-100AH and PC, remove the BR-100AH from the PC and connect the BR-100AH to the device you wish to use wirelessly using a network cable. For details, refer to **Connecting Non-wireless Devices** in the next page.

### **Connecting Non-wireless Devices**

**1.** Turn off the non-wireless device that you wish to use wirelessly and connect the BR-100AH to it using a network cable. The connection method will vary depending on each operating mode.

#### **Single Client Connection**



### **Multi-Client Connection**



**2.** Connect the AC adaptor to the BR-100AH and the AC plug to the outlet.



**3.** Turn on the non-wireless device connected to the BR-100AH.

When the wireless network is established, all LEDs turn on. The BR-100AH will be ready to use. You can use the non-wireless device over a wireless network.





- Depending on the non-wireless device you have connected, further network settings may need to be configured to that device. In such a case, please configure it according to the operating manual that came with your device.
- When you turn on the BR-100AH and your non-wireless device, be sure to turn on the BR-100AH first. Do not press the push switch then.

## 4-2. Configuration Using AMC Manager®

How to configure BR-100AH using AMC Manager<sup>®</sup> is explained.

### Connecting BR-100AH to a computer

**1**. Connect BR-100AH and the PC (to use for setup) using a network cable.



**2.** Connect the AC adaptor to BR-100AH, and the AC adaptor's plug to an electrical outlet.



**3.** Confirm that the Power LED (orange: (2)) and the wired LED (green: (4)) are turned on.



### Configuration

**1.** Download AMC Manager<sup>®</sup> from the Silex Technology's website and install it to your computer. Launch AMC Manager<sup>®</sup> and confirm BR-100AH is found.



<ul> <li>To start the configuration, the</li> <li>Confirm that an IP Address is</li> <li>If a static IP address is set to cannot be displayed in the for</li> <li>An IP address of the Ethern</li> <li>If the BR-100AH configuration</li> <li>the PC connected with the BR-</li> <li>IP Address: 169.254.111.1</li> <li>Subnet Mask: 255.255.0.0</li> </ul>	e PC and BR-100AH need to communicate each other properly. correctly configured to the PC. the Ethernet adapter of the PC, the Web configuration interface ollowing cases: net adapter is set for a different subnet. n web page does not appear, set the IP address of the Ethernet adapter of -100AH as following:
---	--

2. Create a configuration file using the template. Click the icon Create the configuration file and click Create from Template from the toolbar (1). In the Select Template window, select the device to configure and click OK (2).

C 🖉 🎾 🖣	5 G 🕒 G d				٩	
roup	Device Name	t Create from Selected D	evice Address	IPv6 Address	Version	
Detected Devices	BR-100AH	Create from Template     Edit Existing File	69.254.111.1	11	1.00	
			Select Template	nplate file.		
			Device Name AP-100AH AP-500AC AP-511AC	Comments This is the f This is the f This is the f	ile for AP-100AH. ile for AP-500AC. ile for AP-511AC.	Í
			BR-100AH	This is the f	ile for BR-100AH.	
	¢		BR-400AN BR-400AN Ver.2.0.0 DS-520AN	This is the f This is the f This is the f	ile for BR-400AN. ile for BR-400AN Ver.2.0.0 or . ile for DS-520AN.	-(

**3.** In the **Create Configuration File** window, check the check box of the items you want to use for the configuration file, edit the settings, and click **Save**. In the dialog to save the configuration file, specify the file name and click **Save**. The password shall be set for the first time configuration.

Create Configuration File - BR-100AH × Edit the file to use for bulk configuration. 📒 Select All 🛛 🚊 Clear All System Configuration 🗌 ltem Contents Network Configuration Basic Settings Wired LAN Configuration Password Wireless LAN Configuration Wireless LAN I/F 1 Display the password <u>O</u>pen... | <u>S</u>ave **|** <u>C</u>lose

Display the password       Display the password	Create Configuration File - BR-100A	λH	×
System Configuration       Item       Contents         Network Configuration       Basic Settings       SilexAH         Wireless LAN Configuration       Network Authentication       Open         Wireless LAN I/F 1       Pre-Shared Key       ************************************	Edit the file to use for bulk	configuration.	
System Configuration       I tem       Contents         Wirel LAN Configuration       Basic Settings       SilexAH         Wireless LAN Configuration       Network Authentication       Open         Wireless LAN I/F 1       Pre-Shared Key       *********         Security Settings       Stealth Mode       Disable         EAP Settings       I EEE802.1X Authentication Mode       PEAP         Inner Authentication Mode       IEEE802.1X User Name       anonymous         I EEE802.1X Password       ********       Security Calificate File         C CA Certificate File       Secret Key Password of Client Certificate       Secret Key Password of Client Certificate		Select All	
Display the password	System Configuration Network Configuration Wirel LAN Configuration Wireless LAN Configuration Wireless LAN I/F 1	Item         Basic Settings         SSID         Network Authentication         Pre-Shared Key         Security Settings         Stealth Mode         EAP Settings         IEEE802.1X Authentication Mode         IEEE802.1X User Name         IEEE802.1X Vary Name         IEEE802.1X Password         CA Certificate File         Cient Certificate File         Secret Key of Client Certificate         Secret Key Password of Client Certi	Contents SilexAH Open Tisable Disable PEAP MSCHAPv2 anonymous
Open V Save V Close	Display the password	Open 🔽 Sa	ave 🗸 Close

**4.** Select the BR-100AH unit to configure from the device list of AMC Manager<sup>®</sup>, and click the icon **Configure multiple devices in bulk**.

👌 🔎 🔎 🖷	L 🖪 🖪 🚺							,
oup	Device Name	Con gure	multiple devices	n bulk	IP Address	IPv6 Address	Ve	rsion
Detected Devices	SR-100AH	84:25:3F:01:	SE:SB SDS	015E5C	169.254.111.111		1.0	0
		C	Device Name	Ethernet Address	Host Name	IP Address	New I	Add Device
			Device Name	Ethernet Address	Host Name	IP Address 169.254.111.111	New I	Add Device
								Delete Device
								Select Config. File
								Open Config. File
								IP Configuration
								Merge Config. File
								Show Config. List
	<							Open Bulk Config. F

 Select the BR-100AH unit to configure from the Configuration List (1) and click the Select Config. File button (2) in the Bulk Configuration window. When a file selection dialog appears, select the created configuration file and click Open.

onfiguration List:					
Device Name	Ethernet Address	Host Name	IP Address	New I	Add Device
BR-100AH	84:25:3F:01:5E:5B	SDS015E5C	169.254.111.111		Delete Device
					Edit Device
					Select Config. File
					Open Config. File
					IP Configuration
					Merge Config. File
					Show Config. List
					Open Bulk Config. File
					Swe Bulk Config File

**6.** Check the check box of the BR-100AH unit to configure (1) and click **Configure Now** (2).

Configuration List:					
De ce Name	Ethernet Address	Host Name	IP Address	New I	Add Device
R-100AH	84:25:3F:01:5E:5B	SDS015E5C	169.254.111.111		Delete Devi
					Edit Device
					Select Config.
					Open Config.
					IP Configurat
					Merge Config
					Show Config.
					Open Bulk Conf
					Save Bulk Confi

**7.** The configuration performs and the result is displayed. Click **Close**.

k Configuration			1
The device ha	s been configured.		
Device Name BR-100AH	Ethernet Address 84:25:3F:01:5E:5B	Status Completed.	
		Details	Close

**8. Restart** the BR-100AH for your new configuration to take effect.



### **Connecting Non-wireless Devices**

**1.** Turn off the non-wireless device(s) that you wish to use wirelessly and connect the BR-100AH to it using a network cable. The connection method will vary for each operating mode.

### **Single Client Connection**



### **Multi-Client Connection**





**2.** Connect the AC adaptor to the BR-100AH and the AC plug to the outlet.

**3.** Turn on the non-wireless device connected to the BR-100AH. When the wireless network is established, all LEDs turn on. The BR-100AH will be ready to use. You can use the non-wireless device over a wireless network.





- Depending on the non-wireless device you have connected, other network settings may need to be configured to that device. In such a case, please configure it according to the operating manual that came with your device.
- When you turn on the BR-100AH and your non-wireless device, be sure to turn on the BR-100AH first. Do not press the push switch then.



This chapter explains the BR-100AH functions.

# 5-1. Device Filter

The BR-100AH can allow only specific devices to bridge between the Ethernet port and the wireless network by "Device Filter" function. The function is enabled or disabled through the web configuration page or AMC Manager<sup>®</sup>. When it is disabled, any Ethernet devices connected to the BR-100AH are bridged to the wireless network. When it is enabled, only Ethernet device(s), of which MAC address(es) is/are registered in the BR-100AH, is/are bridged to the wireless network.

silex technology	General Configuration		
English V Status	General Configuration		
- System Vetwork Conf. - General	<ul> <li>Bridge Configuration Name</li> </ul>	Value	-
- IOP/IP - Wired LAN - Wireless LAN	Device Filter Network Device Address	<u>CN</u> v 00-00-00-00-00-00	
Security     Password     P Filter	Network Device Address Network Device Address	00-00-00-00-00-00	
<ul> <li>Maintenance</li> <li>Restart</li> <li>Factory Default</li> <li>Firmware Update</li> </ul>	Network Device Address Network Device Address	00-00-00-00-00-00 00-00-00-00-00 00-00-0	
- System Configuration - Logout	Network Device Address	00-00-00-00-00-00 00-00-00-00-00 00-00-0	
- silex Global Site	Network Device Address Network Device Address	00-00-00-00-00	
	Network Device Address Network Device Address	00-00-00-00-00-00	
	Network Device Address Network Device Address	00-00-00-00-00-00	
	Network Device Address Network Device Address	00-00-00-00-00-00	
			Submit
BR-100AH			

### 5-2. IPv4 Access Control

The BR-100AH can allow only specific devices to access it for the device configuration by "IP Access Control" function. The IP address range, which can access the BR-100AH for the configuration, can be set through the web configuration page or AMC Manager<sup>®</sup>. For example, when the range is specified from 169.254.111.109 to 169.254.111.110, only devices with the IP address of 169.254.111.109 and 169.254.111.110 can access the BR-100AH through web configuration page or AMC Manager<sup>®</sup>. The IP address range can be removed when it is not necessary.

Silex technology Select Language English	II. IP. Access Control Configuration	
Status     System     Network Conf.     General     TOP/IP		tep Help
- Wired LAN - Wireless LAN  Security - Password	Add New Yanze.     Value     Starting Address     00000	
- IP Filter V Maintenance - Restart - Factory Default - Firmware Update - System Configuration - Logout	Linding Address 00000	J
- silex Global Site	Name Visue Visue Value	

	🗄 Select All 🔋 Clear All	
System Configuration	ltem	Contents
Network Configuration	Basic Settings	
Wired LAN Configuration	DHCP Client	Auto
Wireless LAN I/F 1	IP Address	169.254.111.111
Others	Subnet Mask	255.255.0.0
	Default Gateway	0.0.0.0
	DNS Server (Primary)	0.0.0.0
	DNS Server (Secondary)	0.0.0.0
	IP Security Settings	
	Filter Address	(Not registered)
	Security Settings	
Filter Address Setting Set the parameters fo	r Filter Address.	
No. Start Address	End Address	
No. Start Address	End Address	

# 5-3. Roaming

The BR-100AH supports background scan-based roaming to switch its connection among access points. The roaming can be enabled or disabled from the web configuration page. The channels to be scanned for the roaming are configurable. When the channels used by the access points are known, limiting the number of scan channels shortens the scan time and minimizes the impact to the data throughput.

Select Language	Wireless LAN Configuration
▼ Status - System ▼ Network Conf. - General - TCP/P - TCP/P	Wireless LAN Basic Configuration     Name     Value
- Password - P Filter Maintenance - Restart - Factory Default - Firmware Update - System Configuration - Lopout	SSD SilexAH
	Bits         Bits <th< th=""></th<>
	Bookean channel mask (20/Hz EW) (
BR-100AH	Name Value



- Please disable NAT mode on the AP-100AH or other 802.11ah Wi-Fi HaLow access point when the roaming function of the BR-100AH is used.

The backscan channel mask setting limits the number of channels to scan for the roaming. However, it can connect to unchecked channels if the access point responds to the probe request with a wider channel bandwidth. (e.g. The access point responds with 2MHz channel bandwidth at 907MHz against the BR-100AH's probe request with 1MHz channel bandwidth at 906.5MHz due to the channel overlapping.)

# 5-4. Web (HTTP/HTTPS)

The BR-100AH has web pages for settings. Various settings can be made from the web page. The BR-100AH can also be restarted or reset to the factory setting through the web page. Enter http://169.254.111.111 (the IP address of BR-100AH's Ethernet port) on your web browser when the computer is connected to the BR-100AH through the Ethernet port. The scheme "https://" is available when HTTPS is enabled. If HTTP is disabled, http:// accesses are redirected to https:// URLs.

The BR-100AH supports TLS version 1.0/1.1/1.2. A self-signed certificate is alternatively applied if a server certificate is not set. CA certificate, local certificate and local private key can be loaded to secure HTTPS connection for the device configuration.

silex technology	TCP/IP Configuratio	n
English V	TOP/P Socienation	
▼ Status - System	CA Certificate	
Network Cont     General     TOD/ID	Name	Value
- Wired LAN - Wireless LAN	Certificate File	Choose File No file chosen
<ul> <li>Security</li> <li>Password</li> </ul>	<ul> <li>Local Certificate</li> </ul>	
- IP Filter	Name	tale
Toenterarta     - Restart     - Restart     - Factory Default     - Firmware Update     - System Configuration     - Lopout	Ourrent Setting	Deete notifefore-May 1 01:00:00 2017 Off notifefore-May 1 01:00:00 2117 Off subject=//C-3P/ST=Kyoto/L+Scika/O+silex technology, Inc./CH+5058D1814
- silex Global Site	Certificate File	Chose File No file chosen
	Local Private Key	
	Name	Value
	Current Setting	Dokto
	Private Key File	PKC58 Private-Key: (2048 bit) Choose File No file chosen
	Pessword	
		Sutmit
BR-100AH	1	

	Select All		
System Configuration Network Configuration Wirel LAN Configuration Wireless LAN Configuration Wireless LAN VF 1	Item SNMP (161) HTTP5(443) Legacy Discovery SX-SNP SNMPV1 Settings SNMP System Name SNMP System Description SNMP System Location SNMP System Location SNMP System Contact SNMP System Contact SNMP Set Community Name SNMP Set Community Name	Contents Enable Enable Enable SDS000000 Silex BR-100AH	
Display the gassword	Authentication Settings CA Certificate Local Private Key Local Private Key Coae	(Registered) (Registered)	

### 5-5. Maintenance

### Restarting

### How to restart BR-100AH by unplugging the AC adaptor:

**1.** Unplug the AC adaptor of BR-100AH from the outlet.



**2.** Plug the AC adaptor back into the outlet.



**3.** When the POWER LED turns on, the restart is completed.



How to restart BR-100AH using the Web configuration interface:

**1.** Login to the Web configuration interface using your web browser.

Silex technology	System Status		670
Select Language			
English	System Status		
▼ Status - System			
▼ Network Conf. - General - TCP/IP	TCP/IP Information		
- Wired LAN	Name	Status	
WICIOSS LAIN	IP Address		
Security	Subnet Mask		
- Password	Default Gateway	0.0.0.0	
- I- Filler	DHOP Server	0.0.0	
<ul> <li>Maintenance</li> <li>Restart</li> <li>Factory Default</li> </ul>	Wireless LAN Information 0000	]	
- Firmware Update	Name	Status	
- System Configuration	Current SSID		
Logoat	Current Channel		
	Channel Bandwidth	MHz	
- silex Global Site	Wireless Signal Strength	dBm	
	Wired LAN Information		
	Name	Status	
	Link Status	Ethernet link Up	
BK-100AH			
Ver BB3-2.00 (2021.06.07) 84=25=31=01=5a=36			Conversibilit(C) 2020 alley technology. Inc.

2. From the left menu on the Web configuration interface, click **Maintenance** - **Restart**. In the page displayed, click **Yes**.

Silex technology	Server Re	estart	01
English 🗸	Restart		
▼ Status - System	2		
▼ Network Conf. - General - TCP/IP - Wireless LAN - Wireless LAN	Are you su	re you want to restart the server?	
▼ Security - Password - IP Filter			
- Restart			
- Firmware Update - System Configuration - Logout			
- silex Global Site			
BR-100AH			
Ver BB3-1.00 (2020.11.20)			
84-25-3f-01-5e-36			Copyright(C) 2020 silex technology, Inc

#### How to restart BR-100AH using AMC Manager®:

**1.** Right click the BR-100AH to restart and click **Restart**.



**2.** Click **Restart**. The pop-up window appears, then click **Yes**.

Restart Device		×	
Click [Restart] to restart the device.			
Device Name Ethernet Address	Status Waiting.		AMC Manager ×
	<u>R</u> estart <u>C</u> lose		Yes <u>N</u> o

**3.** Enter the password for the BR-100AH and click **OK**. When the restart finishes, **Status** changes to **Completed**. (Password window appears only when the password is set.)

		Restart Device			^
		The device has	s been restarted.		
Enter Password	×	Device Name	Ethernet Address	Status	
Enter the password to connect to the device blow.		✔ BR-100AH	84:25:3F:01:5E:35	Completed.	
Device Name: BR-100AH					
Ethernet Address: 84:25:3F:01:5E:35					
Password:	>				
OK Cancel					Close

### Factory Default Configuration

The BR-100AH can be reset to the factory default configuration except for the parameters listed in the table below:

Item name	Default value
General - General Settings	
System description	"Silex AP-100AH" or "Silex BR-100AH"
TCP/IP - CA Certificate	
Certificate File	None
TCP/IP - Local Certificate	
Certificate File	Self-signed Certificate
TCP/IP - Local Private Key	
Private Key File	Automatically generated
Password	None
Maintenance	
Firmware	Ver BB3-1.00 (2020.11.30) Note: Firmware is not reverted to the factory default once updated

### How to reset BR-100AH to factory defaults using the Push Switch:

**1**. Press and hold the push switch on the back side of the BR-100AH for more than 5 seconds, and release it while the BR-100AH is powered on.

Confirm that LEDs except for the power LED turns off after releasing the push switch.



How to reset BR-100AH to factory defaults using the Web configuration interface:

**1.** Login to the Web configuration interface using your web browser.

Silex technology Select Language English	System Status	-	010
<ul> <li>Status</li> <li>System</li> </ul>			
▼ Network Conf. - General - TCP/IP - Wired LAN - Wireless LAN	TCP/IP Information     Name     Reference	Status	🧿 Ketresh 📑 HELP
Security     Password     P Filter	Subnet Mask Default Gateway DHCP Server	0.0.0.0 0.0.0.0	
<ul> <li>Maintenance</li> <li>Restart</li> <li>Factory Default</li> </ul>	<ul> <li>Wireless LAN Information 000</li> </ul>	00	
- Firmware Update - System Configuration - Logout	Name Current SSID Current Channel Channel Bandwidth	MHz.	
- silex Global Site	Wireless Signal Strength Wired LAN Information	dBm	
	Name Link Status	Status Ethernet link Up	
BR-100AH			
Ver BB3-2.00 (2021.06.07) 84-25-3f-01-5e-36			Capyright(C) 2020 silex technology, Inc.

2. From the left menu on the Web configuration interface, click **Maintenance** – **Factory Default**. In the page displayed, click **Yes**.

Silex technology Select Language	Enctory Default	6
English         V           Status         - System           V Network Conf.         - General           - General         - CP/P           - Wired LAN         - Wiredss LAN	Factory Default     Are you sure you want to load the factory default?	P HELP
Security     Password     P Filter      Maintenance     Factory Default     System Configuration	Ves D No	
- Logout		
BR-100AH Ver BB3-1.00 (2020.11.30) 84-25-31-01-5e-36		Capyright(C) 2020 silex technology, Inc.

**3.** After the factory default configuration is completed, the BR-100AH will automatically restart. The web configuration page can be accessible again through the Ethernet port by 169.254.111.111.

How to reset BR-100AH to factory defaults using AMC Manager®:

**1.** Right click the BR-100AH to restart and click **Factory Default Configuration**.



2. Check the check box of **Restart the device after the factory default** configuration, and click **Reset**. The pop-up window appears, then click **Yes**.

Factory Default Configure	ation		×	
Click [Reset] to	o reset the device to factory de	aults.		
Device Name BR-100AH	Ethernet Address 84:25:3F:01:5E:35	Status Waiting.		-
				AMC Manager ×
				? Are you sure that you want to initialize the device?
Repart the <u>d</u> evice a	fter the factory default configu	ration <u>R</u> eset	<u>C</u> lose	<u>Y</u> es <u>N</u> o

**3.** Enter the password for the BR-100AH and click **OK**. When the restart finishes, **Status** changes to **Completed**.



### **Firmware Update**

The latest firmware file can be downloaded from our website when it is available.

See the instructions below to download the firmware file. For how to upload the firmware file to BR-100AH, refer to the firmware update procedure sheet file contained in the firmware file you download.



- The current firmware version can be identified at the bottom left of the Web configuration interface.

Note

### Firmware Update Procedure:

**1.** Access our website below.

	URL
USA / Europe	https://www.silextechnology.com/connectivity -solutions/device-connectivity/br-100ah

- **2.** Go to the support section and download the firmware file.
- **3.** Extract the downloaded file to your folder. XXXX.bin (binary file) will be found.
- **4.** Access the BR-100AH's web configuration page. IP address of the BR-100AH is one of the following:
  - If the BR-100AH can be connected to your computer with the Ethernet cable • directly, you can access the BR-100AH with 169.254.111.111
  - If you don't know the IP address of • the BR-100AH's wireless interface, AMC Manager<sup>®</sup> should find the IP address of BR-100AH's wireless interface.

AMC Ma	nøger Fr	vee						<b>.</b>		×
Elle Edit S	tat <u>u</u> s	Settings Jools H	elp	12 2	-					
CS	2		🖳 🕼 🕼 💋	· 🚺 · 🚺						P
Group		Device Name	Ethernet Address	Host Name	IP Address	IPv6 Address	Version	Status	^	
Detect	ed Devi	OS-520AN	84:25:3F:01:1D:15	DS520-011D15	192.168.0.163		1.4.0	Active		
		AP-100AH	84:25:3F:01:5E:13	SDS0011FB	192.168.0.4		1.00	Active		
		SR-100AH	84:25:3F:01:5E:35	SDS0011FB	192.168.0.37		1.00	Active		
		OD5-600	84:25:3F:1A:25:E3	D5600-1A25E3	192.168.0.3		1.4.1	Active		
		@ BR-310AC	84:25:3F:29:46:64	SX29A664	192.168.0.227		1.2.0	Active		
		SX-AP-4800ANZ	2 84253F426981	SX426981	192.168.0.12		1.1.1	Active		
¢	3	¢								
Local Local	Date 0		6	Product Manage	This was believed	March Married		Pater.		
Level	Dater	orne	Event	Device Hame	Ethemet Address	riost name		Details		
informa	1/29/2	0212:59:29 PM	Device detection	BR-100AH	84:25:31:01:56:35	SDS0011PB		Device was found.		
informa	1/29/2	M4 80905 120	Device detection	BR-STUAL	54:23:3P129:46:64	53294004		Device was found.		
taforma	1/20/2	021 2:2907 PM	Device detection	SA-AP-HOUGHINE	04(23(3F)4(20)(0)	57420901		Device was found.		
laforma.	1/30/3	1021 2:3907 PM	Device detection	DS 600	04(2)(34(0)(36(1))	005600 14 256	12	Device was found.		
informa_	1/29/2	1021 2:59:06 PM	Device detection	DS-520AN	84:25:3F:01:1D:15	DS520-011D1	15	Device was found.		
item(s) sales	ted.					192	.168.0.4	84:25:3F:01:5	E:13	

**5.** Login to the BR-100AH device configuration page.

Select Language English	System Status			Beliect Lawanee British V Status - System	H Login
- System - Loop - Loop - silex Global Site	TOP/IP Information     Hem     Paddress     Surver Mail     Default Gateway     Default Gateway     Default Gateway     Default Starse     Oravest SID     Current Compare Bandwidth     Wretes Sund Strength     Wrete Sund Strength     Wrete CAN Information     Neme	Datu 0000 0000 Datu Datu Me dim	Profesh     Profesh     Profesh	- Login - altor Gickal Site	
BR-100AH Ver EB3-200 (02106.07) 84-25-34-01-5e-36		contenting (INK OD	Copyright(C) 2020 siles technology, Inc.	BR-100AH Ver 883-1.00 (2020-1.120) 04-25-3-0-1.5e-05	

**6.** Click **Firmware Update** and click **Choose File**. A pop-up window appears to select the firmware image. Please select the binary file found in step 3.

silex technology Select Language	Eirmware Update	
English 💙	Firmware Update	
▼ Status - System		B HEI P
▼ Network Conf. - General - TCP/IP - Wired LAN - Wireless LAN	Specify a firmware update file to uprade the firmware.  Click (Browse) and select the firmware update file saved on your PC. When finished, click (Update).	ay nur
<ul> <li>Security</li> <li>Password</li> <li>TR Silter</li> </ul>	<ul> <li>It may take a while to upgrade the firmware.</li> <li>Please do not turn off this product while the firmware update is in progress.</li> </ul>	
Maintenance - Restart	New firmware : Choose File No file chosen	
Firmware Update     System Configuration     Locout		Update
- silex Global Site		
BR-100AH		
Ver BB3-1.00 (2020.11.30) 84-25-31-01-5e-36		Copyright(C) 2020 silex technology, inc.

**7.** Click **Update** once the firmware binary file is selected.

Select Language	II. Firmware Update
Status     System     System     Vietnak Conf.     General     TCP/IP     Wrold LAN     Wrolds LAN     Sacurity     Password     P Filter     Mintenance     Restart     Sacurity	Specify a firmware update file to upgrade the firmware.  Click [Broweal and releat the firmware update file saved on your PC.  When finished, click [Update]  I knay take a while to upgrade the firmware update is in progress.  Please do not turn off this product while the firmware update is in progress.  New firmware : Choose File APER-100-rc7 bin
- Factory Default - Firmware Ugdate - System Configuration - Lecout - silex Global Site	
BR-100AH	
Ver BB3-1.00 (2020.11.30) 84-25-3f-01-5e-36	Copyright(C) 2020 silex technology, Inc

**8.** Click **ОК.** 

192.168.0.37 says Are you sure you want to update the firmware?		
	ОК	Cancel

**9.** Please wait until the firmware update completes. Once it completes, the default page of the web configuration will appear.

Select Language	E Firmware Update
Status     System     Vetwork Conf.     General     TCP/P     WirelLAN     Wireless LAN      Security     Becurity	Updating the firmingra This product will succentually reboot itself, after completing the update. Prozes such for a shile
Paisword     PFilter      Maintenance     Restart     Factory Default     Firmware Update     System Configuration     Logout	
- silex Global Site	
BR-100AH	
Ver BB3-1.00 (2020.11.30) 84-25-31-01-5e-36	Covright(C) 2020 eller technology, ho:

# A. Appendix

## A-1. List of All Settings

The BR-100AH has the following configuration items:

General Configuration – General Settings			
System Nar	me		
Details	A name of the BR-100AH		
Range	Maximum of 32 characters		
Default Value	SDSxxxxx		
Note	"xxxxxx" is 3 bytes of the MAC address		
System Des	scription		
Details	Description of the BR-100AH		
Range	Maximum of 64 characters		
Default Value	Silex BR-100AH		
System Co	ntact		
Details	A contact to manage the system.		
Range	Maximum of 63 characters		
Default Value	   		
System Loc	ation		
Details	A location where the BR-100AH is installed		
Range	Maximum of 16 characters		
Default Value	   		
SNMP Get	Community Name		
Details	A community name to be used to get SNMP information from the BR-100AH		
Range	Maximum of 16 characters		
Default Value	   		
Note	The value does not appear on the web page		
SNMP Set Community Name			
Details	A community name to be used to set SNMP items of the BR-100AH		
Range	Maximum of 16 characters		
Default Value	   		
Note	The value does not appear on the web page		

### General Configuration – Bridge Configuration

Device Filt	er
Details	Enable/Disable the device filter function
Range	OFF/ON
Default Value	OFF
Network D	evice Address
Details	Mac address of devices that the BR-100AH allows to bridge to a wireless network
Range	Max 17 characters
Default Value	00-00-00-00-00
Note	Up to 16 MAC addresses can be registered. When the filter function is disabled, the communication is bridged to wireless network even when it is an access from the devices not registered to the Network Device Address.

TCP/IP Cor	TCP/IP Configuration – TCP/IP Configuration		
DHCP			
Details	IP address setting method To assign an IP address using DHCP, the DHCP server must be running in your subnetwork.		
Range	AUTO/DHCP/STATIC		
Default Value	AUTO		
IP Address			
Details	Set the IP address of the wireless interface. If the DHCP is enabled on your network, the IP Address obtained from it will be applied.		
Range	0.0.0.0-255.255.255.255		
Default Value	169.254.111.111		
Subnet Ma	isk		
Details	Set the subnet mask of the wireless interface. If the DHCP is enabled on your network, the IP Address obtained from it will be applied.		
Range	0.0.0.0 - 255.255.255.255		
Default Value	255.255.0.0		
Default Ga	teway		
Details	Set the default gateway IP address of the wireless interface. If the DHCP is enabled on your network, the IP Address obtained from it will be applied.		
Range	0.0.0.0 - 255.255.255.255		
Default Value	0.0.0.0		
<b>DNS Serve</b>	r (Primary)		
Details	Set the DNS primary server		
Range	0.0.0.0 - 255.255.255.255		
Default Value	0.0.0.0		
DNS Server (Secondary)			
Details	Set the DNS primary server		
Range	0.0.0.0-255.255.255.255		
Default Value	0.0.0.0		

TCP/IP Configuration – IPv6 Configuration			
IPv6			
Details	Enable/Disable IPv6 functionality.		
Range	ON/OFF		
Default Value	ON		
DHCPv6 Cli	DHCPv6 Client		
Details	Enable/Disable DHCPv6 functionality.		
Range	ON/OFF		
Default Value	ON		

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TCP/IP Configuration – IP Protocol Configuration			
HTTP(80)			
Details	Enable/Disable HTTP protocol		
Range	ON/OFF		
Default Value	ON		
Note	Disabling HTTP will prevent access to the BR-100AH web server via the browser interface		
HTTPS(443)			
Details	Enable/Disable HTTP protocol		
Range	ON/OFF		
Default Value	ON		
Note	Disabling HTTPS will prevent access to the BR-100AH web server via the browser interface		
TFTP(69)			
Details	Enable/Disable TFTP protocol		
Range	ON/OFF		
Default Value	OFF		
SNMP(161)			
Details	Enable/Disable SNMP protocol		
Range	ON/OFF		
Default Value	ON		
Legacy Disc	Legacy Discovery(4201,19541)		
Details	Enable/Disable Legacy Discovery protocol		
Range	ON/OFF		
Default Value	ON		
SXSMP(60000,60002)			
Details	Enable/Disable SX-SMP protocol		
Range	ON/OFF		
Default Value	ON		

### TCP/IP Configuration - CA Certificate

Current Set	ting	
Details	Information of a CA certificate imported to the BR-100AH. This certificate can be deleted.	
Range	PEM Encoded X509 file	
Default Value	Note installed	
Certificate File		
Details	Upload a CA certificate	
Range	PEM Encoded X509 file	
Default Value	Note installed	
	The certificate file must support the followings:	
	PEM format(*.pem)	
	- Public key algorithm	
	RSA	
	- Public key size	
	2048bit	
	- Signature algorithm	
	SHA-256 with RSA	
	SHA-384 with RSA	
	SHA-512 with RSA	

#### **Current Setting** Details Information of a server certificate imported to the BR-100AH. This certificate can be deleted. Range PEM Encoded X509 file Default Value Self-signed certificate Description Item X.509 Certificate Version v1 Public Key Algorithm RSA Public Key Length [bits] 2048 Signature Algorithm SHA256withRSA Common Name (CN) SDSxxxxxx (from the System Name setting) Organization (O) silex technology, Inc. Locality (L) Seika State or Province Name (ST) Kyoto JP Country Name (C) Not Before May 101:00:00 2017 GMT Not After May 101:00:00 2117 GMT

### TCP/IP Configuration - Local Certificate

Certificate File	
Details	Upload a server certificate
Range	PEM Encoded X509 file
Default Value	Self-signed certificate
Note	The certificate file must support the followings:
	- File format
	PEM format(*.pem)
	- Public key algorithm
	RSA
	- Public key size
	2048bit
	- Signature algorithm
	SHA-256 with RSA
	SHA-384 with RSA
	SHA-512 with RSA

### TCP/IP Configuration – Local Private Key

Current Setting		
Details	Information of a private key imported to the BR-100AH. This private key can be deleted.	
Range	PEM Encoded RSA Private key file	
Default Value	Automatically generated	
Private Key File		
Details	Upload a private key	
Range	PEM Encoded RSA Private key file	
Default Value	Automatically generated	
Password		
Details	A password which protects the private key	
Range	8 – 63 alphanumeric	
Default Value	   	

### Wired LAN Configuration – Wired LAN Basic Configuration

LAN Interface	
Details	Configure the physical network type. Usually, "AUTO" is used.
Range	AUTO / 10 Half / 10 Full / 100 Half / 100 Full
Default Value	AUTO
Note	If a LINK LED on the connected device does not light on when BR-100AH is powered on, change the network type to that of the connected device.

Wireless LA	Wireless LAN Configuration – Wireless LAN Basic Configuration		
SSID			
Details	SSID of wireless LAN that the BR-100AH connects		
Range	1 – 32 characters (alphanumeric, hyphen, underscore)		
Default Value	SilexAH		
Frame Aggr	regation		
Details	Enable Frame Aggregation. This improves maximum throughput but may reduce stability under weak radio conditions.		
Range	ON/OFF		
Default Value	OFF		
Roaming			
Details	Enable roaming. When set to ON, the station will periodically scan Access Points which have the same SSID/security setting, and reconnect if it has better radio reception.		
Range	ON/OFF		
Default Value	OFF		
Network Au	uthentication		
Details	An authentication method for connection with a wireless access point.		
Range	Open/Enhanced Open/WPA3-Personal/WPA3-Enterprise		
Default Value	Open		
Expert Driv	er Options		
Details	Specify additional options for SX-NEWAH driver loading. Contact silex technical		
	support how to use this.		
Range	0-1023 characters		
Default Value	<blank></blank>		
Roaming th	reshold RSSI		
Details	Configure threshold RSSI which switches backscan interval. When the RSSI of current Access Point is lower than this value, "low-RSSI" interval (usually shorter than normal)is applied.		
Range	-75 to -85		
Default Value	-80		
Normal bac	ckscan interval		
Details	Configure normal backscan interval in seconds. Shorter interval will update network situation more quickly, however it will introduce larger overhead and longer latency.		
Range	60 to 300		
Default Value	180		
Low-RSSI ba	Low-RSSI backscan interval		
Details	Configure low-RSSI backscan interval in seconds. Usually configure shorter value than "normal" interval.		
Range	5 to 60		
Default Value	30		

### Backscan channel mask

Details	Select channels to be used for backscan. When you know what channels are
	used for possible roaming candidates, limiting channels will reduce overhead
	associated with the backscan.
Range	Check boxes
Default Value	All checked

### Wireless LAN Configuration – Security Configuration

Pre-Shared Key	
Details	A Pre-Shared secret for WPA3-SAE
Range	WPA3: 8 – 63 characters password
Default Value	Device Server

### Wireless LAN Configuration – IEEE802.1X Configuration

EAP Authentication Mode	
Details	A Pre-Shared secret for WPA3-SAE
Range	EAP-TLS / EAP-TTLS / PEAP / EAP-FAST
Default Value	PEAP

EAP User Name	
Details	User name used for EAP authentication
Range	1 – 63 characters
Default Value	<blank></blank>

Inner Authentication	
Details	Inner authentication method when EAP-TTLS is selected.
Range	PAP / MSCHAPv2
Default Value	MSCHAPv2

EAP Password	
Details	Password for EAP authentication when EAP-TTLS, PEAP or EAP-FAST is selected.
Range	0 – 32 characters
Default Value	   

### Wireless LAN Configuration – IEEE802.1X CA Certificate

Current Setting	
Details	Information of a CA certificate imported to the BR-100AH. This certificate can be deleted.
Range	PEM Encoded X509 file
Default Value	Not installed
Certificate	File
Details	Upload a CA certificate
Range	PEM Encoded X509 file

Default Value	Not installed
	The certificate file must support the followings:
	- File format
	PEM format(*.pem)
	- Public key algorithm
	RSA
	- Public key size
	2048bit
	- Signature algorithm
	SHA-256 with RSA
	SHA-384 with RSA
	SHA-512 with RSA

### Wireless LAN Configuration – IEEE802.1X Client Certificate

Current Setting	
Details	Information of a Client certificate imported to the BR-100AH. This certificate can bedeleted.
Range	PEM Encoded X509 file
Default Value	Not installed

Certificate File	
Details	Upload a client certificate
Range	PEM Encoded X509 file
Default Value	Not installed
	The certificate file must support the followings:
	- File format
	PEM format(*.pem)
	- Public key algorithm
	RSA
	- Public key size
	2048bit
	- Signature algorithm
	SHA-256 with RSA
	SHA-384 with RSA

SHA-512 with RSA

### Wireless LAN Configuration – IEEE802.1X Client Private Key

Current Setting		
Details	Information of a private key imported to the BR-100AH. This private key can be deleted.	
Range	PEM Encoded RSA private key file	
Default Value	Not installed	
Private Key File		
Details	Upload a private key	
Range	PEM Encoded RSA private key file	
Default Value	<blank></blank>	
Password		
Details	A password which protects the private key	
Range	8 – 63 alphanumeric	
Default Value	   	

### Password Configuration

Password	
Details	Configure the password to manage the BR-100AH. This password is used for authentication to login to the Web configuration interface of BR-100AH.
Range	Up to 8 characters
Default Value	(None)

### IP Access Control Configuration – Add New Range

### Starting Address/Ending Address

Details	An address range of the remote host IP to access the BR-100AH for its
	configuration.
Range	0.0.0.0 – 255.255.255.255
Default Value	0.0.0.0

### A-2. Troubleshooting

This section provides the solutions for possible troubles you may experience when you are configuring or using the BR-100AH.

#### I cannot access the BR-100AH through a web browser and/or AMC Manager®

A computer may belong to a different network from the BR-100AH	
Solution	Please check the IP addresses of the BR-100AH and the computer. If they are in the different network, please change the IP address of one of the BR-100AH and the computer.

The IP address of the PC may be blocked by IP Filter functionSolutionPlease try to change PC's IP address to be in the range of allowed IP addresses. If it<br/>is not practical to identify the IP address, please reset the product to the factory<br/>configuration with the push switch and reconfigure the BR-100AH.

HTTP/HTTPS protocol may be disabled	
Solution	If you cannot access the web configuration page, HTTP/HTTPS protocols may be disabled. Please access the BR-100AH with AMC Manager <sup>®</sup> .

#### I cannot access the non-wireless device connected to a LAN port of the BR-100AH.

The bridge feature may be aborted as the non-wireless device is unplugged and	
changed to the other device on the LAN port.	
Solution	Restart the BR-100AH.

If the non-wireless device is unplugged and changed to the other device, BR-100AH will abort bridging of that device, taking such occurrence as an error. Also, when the MAC address filtering is used to restrict the devices to bridge, you will need to change the setting registered to **Network Device Address**.

The BR-100AH or non-wireless device may not be operating correctly.		
Solution	Please check the LED status on BR-100AH. Please also check that the non-wireless	
	device is properly powered on.	

The connection may be restricted by the MAC address filtering on BR-100AH.		
Solution	See the setting at Network Device Address to check that access of the	
	connected device is not restricted by the MAC address filtering.	

#### I cannot connect to BR-100AH in Ad hoc mode.

BR-100AH does not support Ad hoc mode.		
Solution	Only Infrastructure mode can be used.	