

**ICOM**<sup>®</sup>

**INSTRUCTION MANUAL**

WIRELESS LAN BRIDGE  
**SB-110**



**Icom Inc.**

BEFORE INSTALLATION **1**

INSTALLATION AND CONNECTION **2**

SETTING YOUR PC **3**

SETTING SB-110 **4**

SETTING SCREEN **5**

MAINTENANCE **6**

FOR YOUR REFERENCE **7**

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## INTRODUCTION

**Thank you for purchasing Icom Wireless LAN Bridge SB-110.**

**This product is a wireless LAN bridging device connecting LAN system of two or more buildings up to 11Mbps for 800m(0.5mile) wirelessly. Each LAN system needs at least one unit of SB-110 for bridging. One single unit may work as a wireless LAN access point alternatively. Please read this instruction manual before using SB-110. We hope our products serve you years of reliable operation.**

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# INTRODUCTION

## PRODUCT OVERVIEW

- ◎ Two or more SB-110s bridge LAN systems of buildings or rooms while eliminating wiring between them. Single SB-110 unit works as access point for wireless LAN clients at alternative setting.
- ◎ SB-110 can be easily configured with common web browser software.
- ◎ Communication speed between SB-110s is automatically adjusted to 11Mbps, 5.5Mbps, 2Mbps or 1Mbps to maintain network connections if there is interference(function applicable for bridging mode).
- ◎ Data can be protected by high-level security function such as MAC address registration, encryption with WEP function, etc.
- ◎ JIS-4 water-resistant strong enclosure allows outdoor installations as well as indoor applications.
- ◎ This unit uses a waterproof resin casing, therefore installation outdoors is possible.
- ◎ SB-110 uses direct sequence spread spectrum modulation which ensures stabilized communication under influence of noise and interference.

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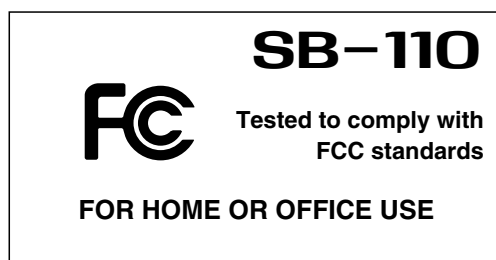
# INTRODUCTION

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## FCC INFORMATION

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**CAUTION:** Changes or modifications not expressly approved by Icom Inc. could void the user's authority to operate this SB-110.

Class B digital device users;

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 instruction manual, 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 determined 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 SAFETY INFORMATION:**

CAUTION: To comply with the FCC RF exposure requirements, this transmitter (built-in antenna) must be fixed-mounted on permanent structures with a separation distance of at least 8 inches (20cm) from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

**For CANADA only**

Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

# INTRODUCTION

## NOTES ON HANDLING

- ◎ If a connection cable is removed or the connection becomes unstable during an operation, an error may occur. Connect the connectors completely and do not touch the connectors during an operation.
- ◎ For the handling of PC and any peripheral devices, follow the instructions provided in the manuals which come with the PC and other peripheral devices.
- ◎ SB-110 may cause the signal interference when it is used in your house. When the interference occurs, move SB-110 as far as possible away from the affected household electric appliance.
- ◎ The CD-ROM (excluding Acrobat Reader) which comes with SB-110 is for SB-110 only. Do not use it for any other devices.
- ◎ Icom Inc. is not responsible for any interference arisen by incorporating a configuration file for SB-110 or a firmware update data file, which is available in our home page, into any device other than SB-110. Moreover, Icom Inc. is not responsible for any interference arisen by modifying or disassembling SB-110. Furthermore, Icom Inc. is not responsible for any damages, lost profits or third party's claim resulting from any missed communication or telephone call due to SB-110's fault, error, malfunction, breakage, data loss or any other external factor such as power failure.
- ◎ All copyrights associated with this manual and all intellectual property rights associated with the hardware and software of SB-110 are held by Icom Inc.
- ◎ Unauthorized diversion of this manual, in part or in whole, is prohibited.
- ◎ The content of this manual, the hardware and software associated with SB-110, and the appearance of SB-110 are all subject to change without notice.

## Notational Conventions

### The following notational conventions are used in this manual:

- The names of utilities, menus, windows, tabs, icons, text boxes, and check boxes are enclosed in square brackets ([ ]).
- The names of command buttons within dialog boxes are enclosed in less-than and greater-than signs (< >).

\* The description of this manual is based the used of the firmware version 1.00 (see 6-6).

\* Windows 98 SE represents the Windows 98 Second Edition.

Windows Me represents the Windows Millennium Edition.

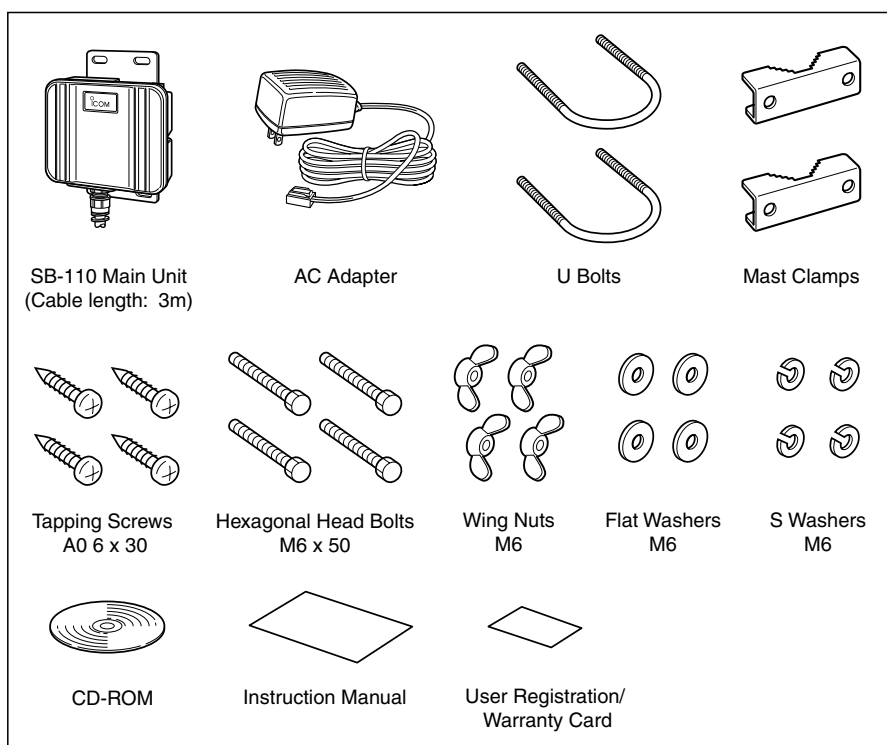
\* The contents of windows appearing in this manual may vary depending on the operating system installed on your computer.

## CONTENTS OF STANDARD PACKAGE

### ■ Checking Contents of Package

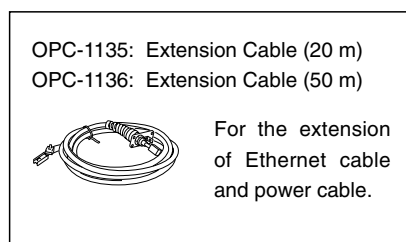
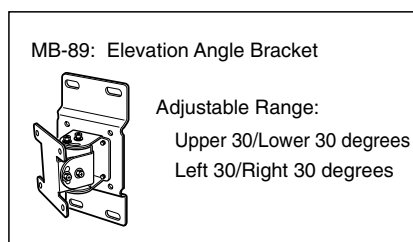
This SB-110 package contains the components below. Before using SB-110, check whether all of those components are contained completely in the package.

If any of the components is not contained in the package, please contact the shop or our service section.



### ■ Optional Accessories

(As of October 2001)



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## SAFETY PRECAUTIONS

**Be sure to read these precautions in order to use SB-110 safely.**

- These precautions are intended to ensure that SB-110 is operated safely and correctly. Follow these instructions to avoid property damage and prevent personal injury to yourself (user) or others in the vicinity.
- Before reading the rest of this manual, read and understand the precautions listed under [ ⚠Warning ] and [ ⚠Caution ] below.
- After reading this manual, store it in a convenient place for future review.

### ■ SB-110

#### **Warning**

Failure to observe the precautions listed here could result in death of or serious injury to the user or those near the user.

- |   |  |
|---|--|
| <ul style="list-style-type: none"> <li>◎ <b>Do not install SB-110 at an unsuitable place where the structural strength is insufficient.</b><br/>Otherwise, SB-110 may drop and become out of order due to vibration or wind and people may be injured.</li> <li>◎ <b>Do not install SB-110 at any crowded area.</b><br/>Otherwise, people may contact SB-110, may fall to the ground or may be injured.</li> <li>◎ <b>Do not install SB-110 near the power line or distribution line.</b><br/>Otherwise, SB-110 cable may contact the power line or distribution line, may be short-circuited or heated. Moreover, people may get an electric shock or a it may catch fire.</li> <li>◎ <b>Do not touch SB-110, antenna cable or power cable when it thunders.</b><br/>Otherwise, you may get an electric shock.</li> <li>◎ <b>Use the specified articles and accessories only.</b><br/>Otherwise, a it may catch fire, you may get an electric shock and SB-110 may become out of order.</li> <li>◎ <b>Be sure to connect the power supply to the DC connector only.</b><br/>Otherwise, a it may catch fire, you may get an electric shock and SB-110 may become out of order.</li> </ul> | <ul style="list-style-type: none"> <li>◎ <b>Do not touch SB-110 with moistened hands.</b><br/>Otherwise, you may get an electric shock.</li> <li>◎ <b>Do not put any heavy thing on the connecting cable or pinch it.</b><br/>Otherwise, the cable may be damaged, a it may catch fire, you may get an electric shock and SB-110 may become out of order.</li> <li>◎ <b>Do not machine, bend by force, twist, pull or heat the connecting cable.</b><br/>Otherwise, the cable may be damaged, a it may catch fire, you may get an electric shock and SB-110 may become out of order.</li> <li>◎ <b>SB-110 is adjusted fully. Do not disassemble or remodel SB-110. Do not repair SB-110 by yourself.</b><br/>Otherwise, a it may catch fire, you may get an electric shock and SB-110 may become out of order.</li> <li>◎ <b>Discontinue use immediately if SB-110 emits smoke, an abnormal odor, or an abnormal noise.</b><br/>Otherwise, a it may catch fire, you may get an electric shock and SB-110 may become out of order. Remove the AC adapter and all the cables from SB-110 immediately. Confirm the smoke disappears and contact the shop or our service section.</li> </ul> |
|---|--|

## SAFETY PRECAUTIONS

### ■ SB-110 (continued from the previous page)



#### Caution

Failure to observe the precautions listed here could result in personal injury or property damage.

- ◎ **Do not disassemble SB-110.**  
Otherwise, you may be injured or get an electric shock, SB-110 may become out of order or the radio disturbance may occur.
- ◎ **Do not perform the installation work at an unstable site.**  
Otherwise, you may fall to the ground or may be injured.
- ◎ **Do not drop the device or give a considerable shock to it.**  
Otherwise, you may be injured or SB-110 may become out of order.
- ◎ **Do not use SB-110 near the TV set or radio.**  
Otherwise, the radio disturbance may occur in SB-110, TV set or radio.
- ◎ **Do not expose SB-110 to the direct sunlight, the air from the air conditioner or any unsuitable places where the temperature varies considerably.**  
Otherwise, SB-110 may be deformed or discolored, a it may catch fire or SB-110 may become out of order.
- ◎ **Follow instructions on manuals and make right connections described in this manual. Do not make a mistake in connection to SB-110.**  
Otherwise, Unrecoverable permanent damage may occur.
- ◎ **If SB-110 is not used for a long time, remove the AC adapter from SB-110 for safety.**  
Otherwise, SB-110 may overheat, catch fire or become out of order.
- ◎ **Do not put SB-110 on any unstable place where is shaky or not level.**  
Otherwise, SB-110 may drop and become out of order or you may fall to the ground and may be injured.
- ◎ **Do not use any unsuitable material of which strength is insufficient (antenna mast, bracket, etc.) or corrosive material.**  
Otherwise, SB-110 may drop and become out of order or you may be injured.
- ◎ **Do not use SB-110 in the site where strong magnetic fields or static electricity is generated or where is exposed to the temperature or humidity exceeding the specifications prescribed in the instruction manual.**  
Otherwise, Unrecoverable permanent damage may occur.
- ◎ **When it thunders, remove the AC adapter from the outlet to stop operation. Do not install, service, connect or disconnect cables.**  
Otherwise, a it may catch fire or you may get an electric shock.
- ◎ **Do not use paint thinner or solvent to clean SB-110.**  
Otherwise, the case material may degrade and the paint may peel. Usually, clean SB-110 with a soft cloth. If the case is stained considerably, wipe the case using a cloth dampened with detergent that has been diluted with water.

## SAFETY PRECAUTIONS

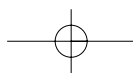
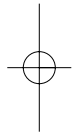
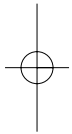
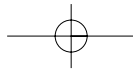
### ■ AC Adapter (Accessory)



#### Warning

Failure to observe the precautions listed here could result in death of or serious injury to the user or those near the user.

- ◎ **Do not use the AC adapter for any other devices.**  
Otherwise, a it may catch fire, you may get an electric shock and SB-110 may become out of order.
- ◎ **Use the AC adapter in AC 120 V power supply only.**  
Otherwise, a it may catch fire, you may get an electric shock and SB-110 may become out of order.
- ◎ **Be sure to hold the plug body when you plug and unplug the AC cable.**  
Otherwise, a it may catch fire, you may get an electric shock and SB-110 may become out of order.
- ◎ **Use AC outlet with enough capacity to accommodate the AC adapter of SB-110.**  
Otherwise, a it may catch fire, you may get an electric shock and SB-110 may become out of order.
- ◎ **Do not tie the AC cables in a bundle.**  
Otherwise, the cables is heated and a it may catch fire.
- ◎ **Do not touch the AC plug and devices with moistened hands.**  
Otherwise, you may get an electric shock.
- ◎ **Insert the AC plug into the outlet completely.**  
If the plug is not inserted completely, a it may catch fire or you may get an electric shock.
- ◎ **Do not modify, bend illegally, twist or heat cables.**  
Otherwise, the cable may be damaged, a it may catch fire, you may get an electric shock and SB-110 may become out of order.
- ◎ **Do not put any heavy thing on the AC cable or pinch it.**  
Otherwise, the cable may be damaged, a it may catch fire, you may get an electric shock and SB-110 may become out of order.
- ◎ **If a metal part of the AC plug and its surroundings are covered with dust, wipe it with a dry cloth completely.**  
Otherwise, a it may catch fire.
- ◎ **If the AC cable is damaged or if the AC cable cannot be inserted completely, do not use such cable.**  
Otherwise, a it may catch fire, you may get an electric shock, SB-110 may become out of order, data may be lost. Please contact the shop or our service section.



## BEFORE INSTALLATION

## CHAPTER 1

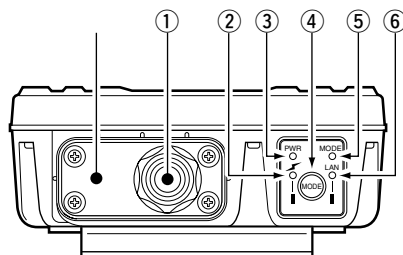
This chapter describes what you should consider and prepare when you installing SB-110.

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## 1 BEFORE INSTALLATION

### 1-1 Name and Function of Component



#### ① Ethernet cable/DC cable

Used to connect SB-110 to the wired LAN (Hub).

This cable is for straight connection.

Connect the AC adapter, which comes with SB-110, to the DC cable.

#### ② [ ⚡ ] (Red) indicator

Turns on when the connection to SB-110 has been established. The indicator turns off when:

- All the radio devices is in no-communication state for one or two minutes.
- All the radio devices is out of radio transmission area for one or two minutes.

#### ③ [PWR] (Green) indicator

Turns on when SB-110 turns on.

Blinks alternately with the [MODE] indicator in the [UTILITY] mode operation.

Blinks simultaneously with the [MODE] indicator in the [INITIALIZATION] mode operation.

#### ④ <MODE> button

Use for an operation in the [UTILITY] mode and [INITIALIZATION] mode.

#### ⑤ [MODE] (Green) indicator

Blinks in the [UTILITY] mode and [INITIALIZATION] mode.

Blinks alternately with the [PWR] indicator in the [UTILITY] mode operation.

Blinks simultaneously with the [PWR] indicator in the [INITIALIZATION] mode operation.

#### ⑥ [LAN] (Red) indicator

Turns on when the connection to LAN has been established normally.

Turns off when the Ethernet cable is not connected.

Blinks when data is communicated.

※

A plate to fix SB-110 cable. If you connect a commercial ground cable, fix it with the screws for this plate.

## BEFORE INSTALLATION 1

### 1-2 Radio Communication Function

The three ways (two modes and one function) below are available as connection method for SB-110 to build up the wireless network.

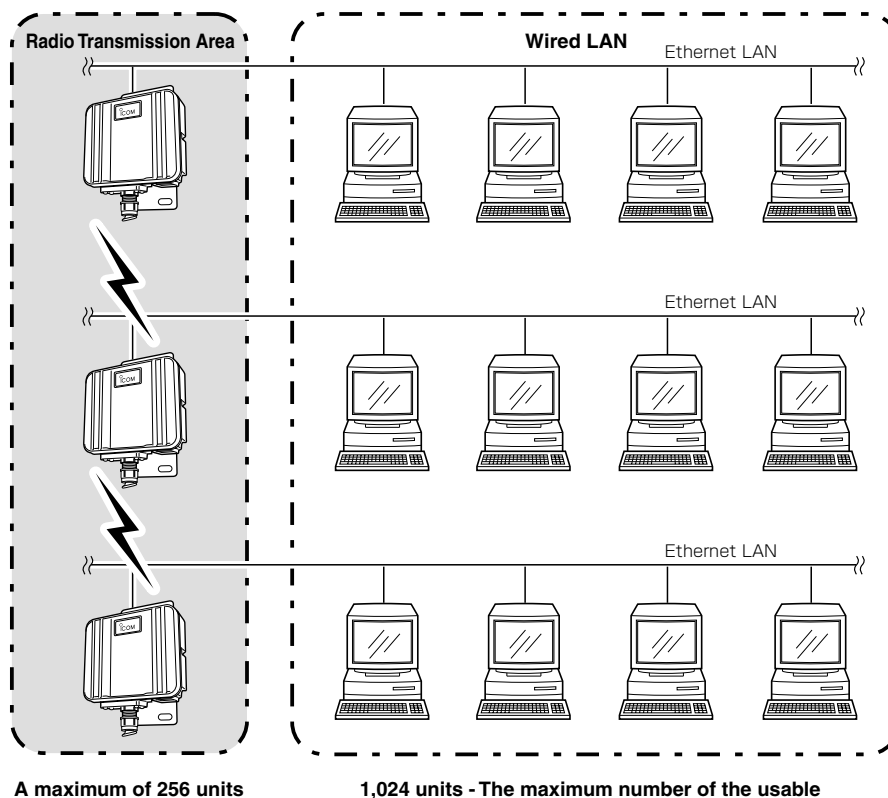
- Building Communication (Wireless Bridge) mode (see 1-3)
- Access Point mode (see 1-4)
- Roaming function (see 1-5)

SB-110 operates in the Building Communication mode by default or when all the settings are initialized. Those two modes cannot be used simultaneously.

### 1-3 Using in Building Communication Mode

In this network system, by connecting those units facing to each other in the Wireless Bridge mode, those wired LAN can be connected in a wireless system.

\* The maximum number of SB-110s used simultaneously is 256. However, it is recommendable to use ten units or less.



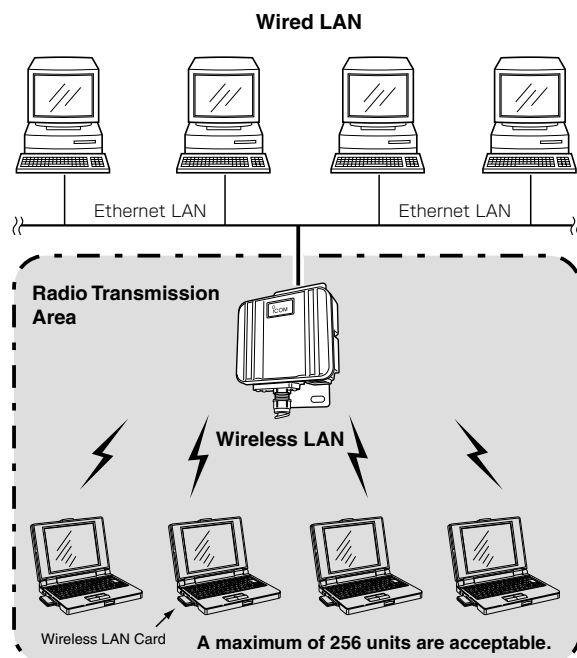
## 1 BEFORE INSTALLATION

### 1-4 Using in Access Point Mode

In this wireless LAN system, wireless terminals are connected to each other through SB-110 by wireless or a terminal connected to SB-110 through Ethernet is connected to a wireless terminal through SB-110 by wireless.

If you use SB-110 as an access point, you need to change the default setting (☞ see 4-3) using a PC connected to SB-110 through a hub on Ethernet LAN.

\* The maximum number of SB-110s used simultaneously is 256. However, it is recommendable to use ten units or less.



### ■ Notes on Use of Access Point Mode

- ◎ The Building Communication mode is disabled when the Access Point mode (☞ see 4-3) is enabled.
- ◎ Any terminal connected to SB-110 by wireless must be equipped with our 11 Mbps wireless LAN card.
- ◎ If [ESS ID] or [WEP] (☞ see page 27) specified in a wireless terminal is different from that of SB-110, any communication to such wireless terminal is unavailable.



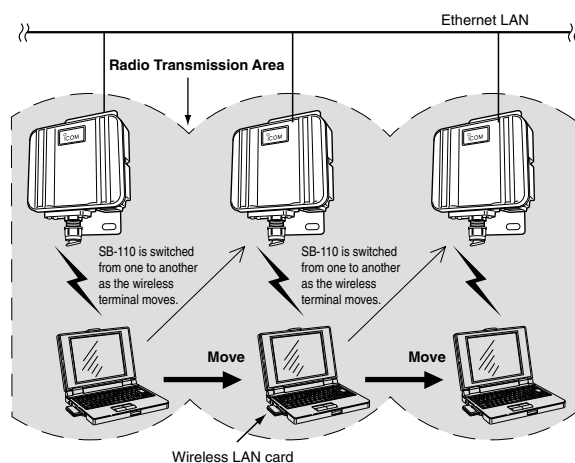
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**BEFORE INSTALLATION 1****1-5 Using Roaming Function**

If SB-110 is located at several places on Ethernet LAN so that the radio transmission areas can overlap each other, the wireless terminal can transmit while moving from a radio transmission area to another. Consequently, the radio transmission area can be extended.

If you use the roaming function, you need to change the default setting (☞ see 4-3) into the Access Point mode using a PC connected to SB-110 through a hub on Ethernet LAN.

\* To connect several SB-110s, use a hub.



■ Notes on Use of Roaming Function (☞ See the next page)

## 1 BEFORE INSTALLATION

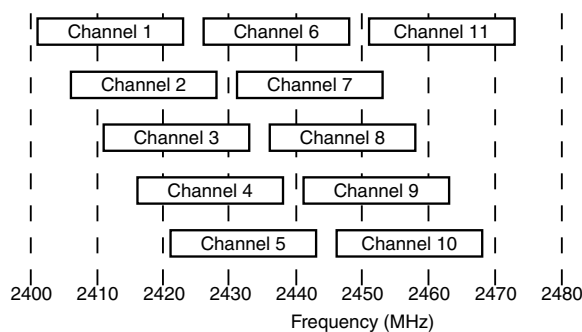
1-5 Using Roaming Function (continued from the previous page)

### ■ Notes on Use of Roaming Function

- ◎ The roaming function is enabled in the Access Point mode and, therefore, this function cannot be used in the Building Communication mode.
- ◎ Any terminal connected to SB-110 by wireless must be equipped with our 11 Mbps wireless LAN card.
- ◎ In the radio transmission area where a wireless terminal moves around, [ESS ID] (☞ see 5-1) and [WEP] (☞ see 5-2) of the wireless terminal must be the same as those of SB-110 used in the roaming function. If [ESS ID] or [WEP] specified in the wireless terminal is different from that of SB-110, any communication to such wireless terminal is unavailable.
- ◎ Any wireless LAN terminal operates as a network group which is the same as that of wired LAN terminal, including the roaming area. Therefore, do not used the roaming function together with the Routing mode (☞ see 5-3).

Otherwise, the communication becomes unavailable due to invalid network address.

- ◎ To avoid radio interference, when any **channel** is changed, keep a sufficient distance equivalent to four channels or more between the channel to be changed and the other party's radio access point channel. Otherwise, as shown below, the radio interference may occur because a part of frequency bands overlap each other. For example, if Channel 1, Channel 6 and Channel 11 are specified, no radio interference occurs.



## BEFORE INSTALLATION 1

### 1-6 Notes on Installation

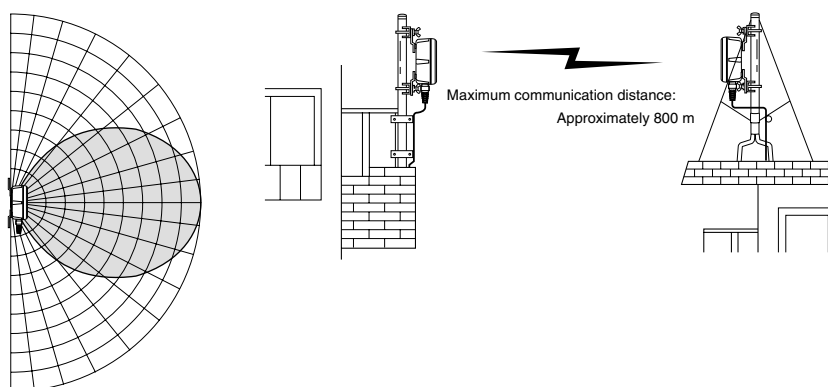
Select a suitable installation site with care. Otherwise, the communication may be interfered or the communication range or speed may be affected.

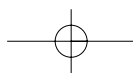
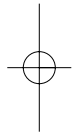
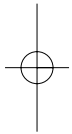
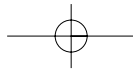
The installation must meet the conditions below:

- The installation site should be located at a high place so that nothing can be put on SB-110. The installation site should not be blocked by any obstruction.
- The installation site must not be exposed to the direct sunlight nor open to the weather.
- The installation site must be rigid without any vibration and SB-110 must not drop.
- Do not locate SB-110s too close to each other or to any other product.
- Any large-sized obstruction must not be located between the installation sites even temporarily. If any obstruction is located between them, the communication may be interfered.
- Do not install SB-110 near a radio tower which sends a strong radio wave.
- Do not install SB-110 near a metal wall of warehouse. A radio wave may be reflected.
- If the communication is made between the different floors, neither steel beam nor fire-proof metal material must be embedded in the floor.
- The total length of Ethernet cable between SB-110 and the hub must be **within 100 m**.
- The distance between two SB-110s (built-in antenna type) must be **within approximately 800 m**.
- If SB-110 is used in the Access Point mode, the distance between two SB-110s (built-in antenna type) must be **within approximately 70 m**.
- Two SB-110s (built-in antenna type) must be faced to each other exactly.

### ■ Directional Characteristics of Antenna

SB-110 (built-in antenna type) has the directionality. When you install two SB-110s, those antennas must be faced to each other at the same position horizontally and vertically.





## INSTALLATION AND CONNECTION

## CHAPTER 2

This chapter describes how to install SB-110 and how to connect it to the peripheral devices.

---

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| How to Install Elevation Angle Bracket ..... | 10 |
| 2-2. Fixing on Wall .....                    | 11 |
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| 2-4. Before Connecting Existing LAN .....    | 13 |
| Checking Network Status .....                | 13 |
| Setting IP Address .....                     | 13 |
| Connecting to Existing LAN .....             | 13 |

### **【 Remarks 】**

- ◎ Do not paint the case of SB-110. Otherwise, the radio wave is attenuated by metal composition contained in the paint and SB-110 cannot show the performance fully.
- ◎ Fix the power cable connected to SB-110 and any other connecting cables to a suitable position where nobody can touch.

### **【 Installation Work 】**

When you install SB-110, we assume no responsibility for any building breakage, any damage resulting from a drop of SB-110 from a high place or unstable site or resulting from any personal injury nor any accident in any other cases. If SB-110 is must be installed at such high place or unstable site, be sure to consult an expert engineer.

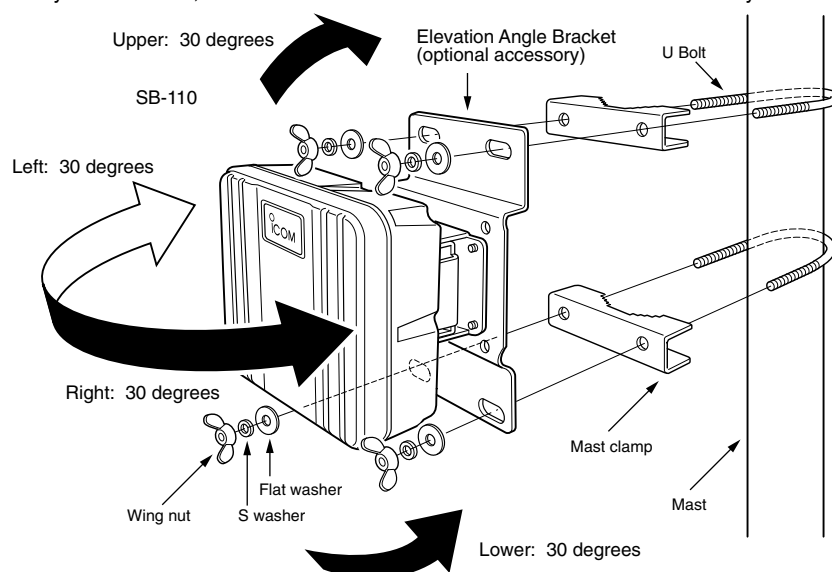
## 2 INSTALLATION AND CONNECTION

### 2-1 Installing on Mast

When you install two SB-110 (the built-in antenna type), any obstruction must not be located between those SB-110s.

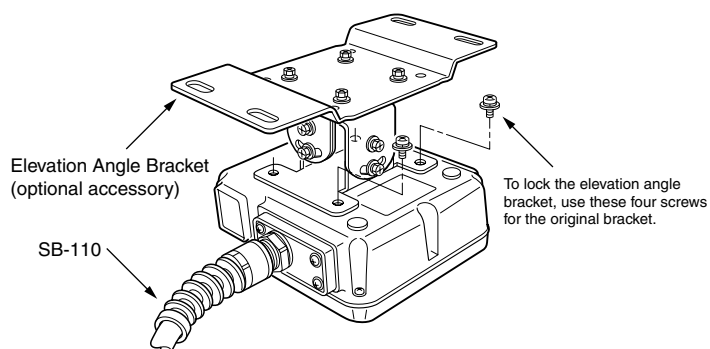
\* The installation with the elevation angle bracket (MB-89), an optional accessory, is shown below as an example:

\* When you use the elevation angle bracket (MB-89), if the mast diameter is small, the U bolt which comes with SB-110 may contact the SB-110 depending on the adjustment angle. When you fix SB-110, take care not to contact the U bolt to SB-110 considerably.



### ■ How to Install Elevation Angle Bracket (Optional Accessory)

Remove a bracket from SB-110 and replace it with the elevation angle bracket (MB-89). To lock this elevation angle bracket, use the screws for the original bracket.

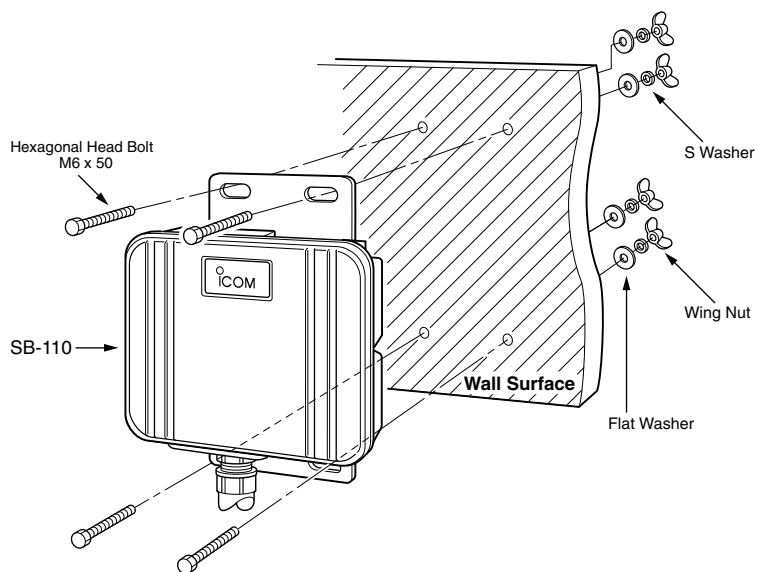


## INSTALLATION AND CONNECTION 2

### 2-2 Fixing on Wall

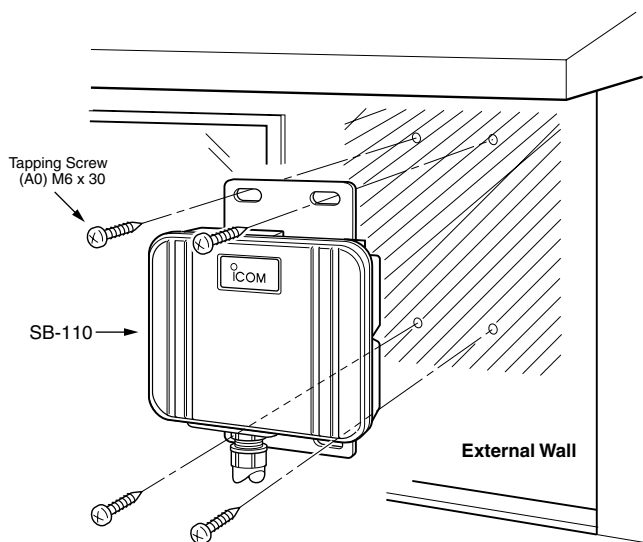
To fix SB-110 on the wall, use the tapping screws or hexagonal head bolts which come with SB-110.

#### [Fixing with Hexagonal Head Bolt]



2

#### [Fixing with Tapping Screw]



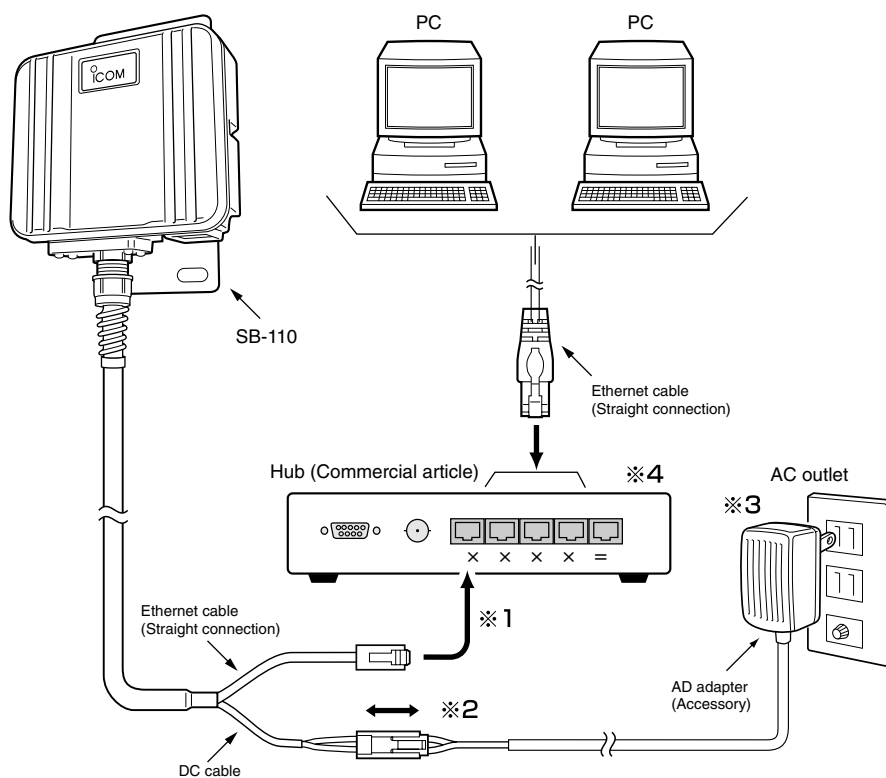
11

## 2 INSTALLATION AND CONNECTION

### 2-3 How to Connect

If SB-110 of a default status is connected to a network in operation, an unexpected accident may happen, e.g., the conflict in the IP address.

When you set SB-110, refer to "Setting SB-110" (see 4) also.



※1.The Ethernet cable of SB-110 is for straight connection. The total length of the Ethernet cable of SB-110 should be within 100 m. The extended Ethernet cable should be the Category 5 or higher.

※2.If the DC connector is exposed to rain, wind commercial adhesive tape around the connector.

※3.The AC adapter is not waterproof. Do not expose it to rain.

※4.SB-110 is available for the hub of the transmission rate 100 Mbps.



## INSTALLATION AND CONNECTION 2

### 2-4 Before Connecting Existing LAN

When you connect SB-110 to an existing LAN, you need to assign the IP address to SB-110 according to the IP address assignment system specified in the LAN in advance.

\* To change the IP address of SB-110, refer to "How to Change IP Address" (☞ see 4-5).

#### [Connection to environment that fixed IP address is assigned]

Assign an available IP address to SB-110.

#### [Connection to environment that the DHCP server function is used]

Change the SB-110 setting to disable the DHCP server function and assign an IP address which is not assigned automatically.

### ■ Checking Network Status

When a network is built on an existing LAN, please note the points below:

#### [IP address of each PC on LAN]

For TCP/IP, if an IP address of a network device (e.g., PC) on the network is the same as that of SB-110, any communication cannot be made between SB-110 and such network device. Moreover, the entire network may be affected.

If any network device on an existing network has the IP address [192.168.0.1], you need to change the default IP address of SB-110 (☞ see 4-5) before connecting SB-110 to such existing network.

When you assign an IP address to network devices statically, take care not to assign the same IP address to those network devices. Even when you assign the IP address dynamically, you need to change the setting so that the IP addresses assigned by the DHCP server function are different from the IP address of SB-110. Please note that the broadcast address cannot be assigned to any device on the network.

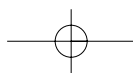
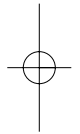
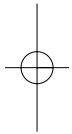
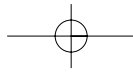
### ■ Setting IP Address

When the IP address of any other network which you want to connect is the same as that of SB-110, change the IP address into one specified in the LAN.

\* For how to set it, refer to "How to Change IP Address" (☞ see 4-5).

### ■ Connecting to Existing LAN

Connect to the LAN referring to "How to Connect" (☞ see 2-3).



This chapter describes how to set a PC which communicates with SB-110. Read an applicable section as necessary.

---

|  |    |
|--|----|
| 3-1. Connecting in Building Communication Mode | 16 |
| Connecting to Ethernet Cable of SB-110         | 16 |
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| Setting TCP/IP Protocol                        |    |
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## 3 SETTING YOUR PC

### 3-1 Connecting in Building Communication Mode

This section describes the setting to connect your PC to SB-110 through a hub.

|               |   |               |
|---------------|---|---------------|
| <b>Step 1</b> | <b>Connecting Your PC to SB-110</b> —————         | <b>12, 16</b> |
| <b>Step 2</b> | <b>Setting TCP/IP</b> —————                       | <b>16</b>     |
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| <b>Step 4</b> | <b>Checking IP Address Assigned by SB-110</b> ——— | <b>29</b>     |

#### ■ Connecting to Ethernet Cable of SB-110

Referring to the description of 2-3, connect the Ethernet cable of SB-110 to your PC through the hub. If your PC has no Ethernet port, you need to mount any commercial Ethernet card to the PC. Mount it to your PC according to the instruction manuals which come with the PC and Ethernet card.

#### ■ Setting TCP/IP Protocol

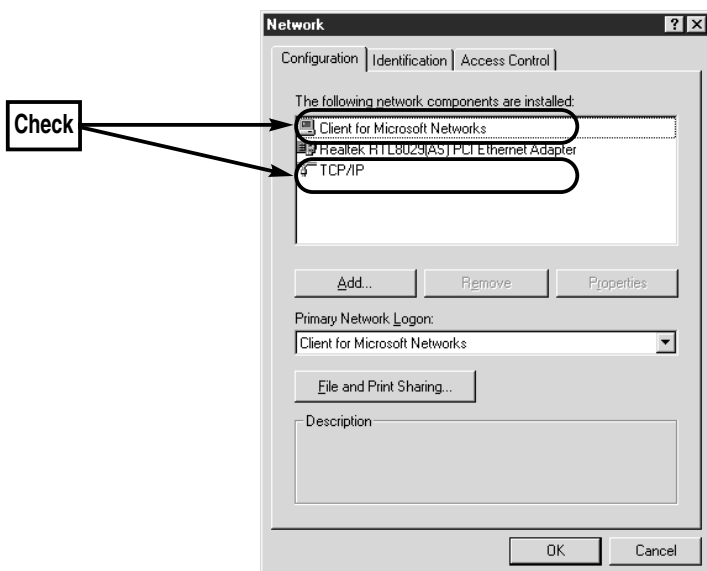
You need to install a network protocol module (driver) called "TCP/IP" in every PC which communicates with SB-110. Install the driver referring to the instruction manual which comes with your Ethernet card.

##### [Windows Me]

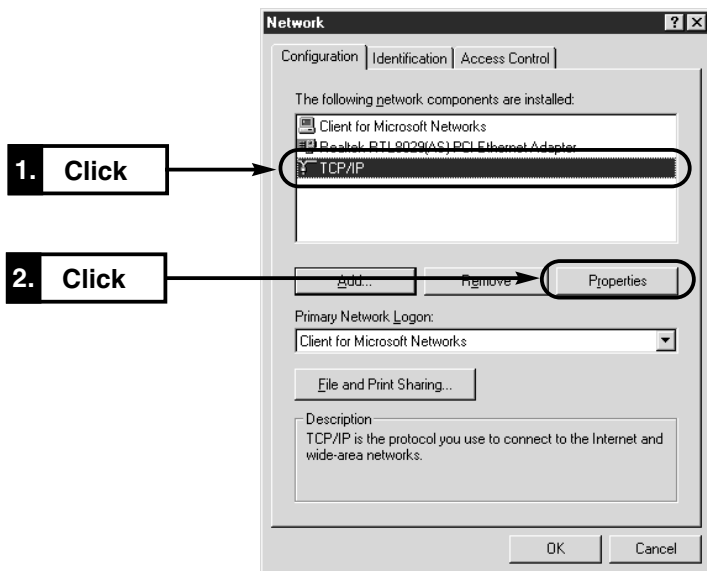
1. Select [Start] → [Setting (S)] → [Control Panel (C)] → [Network] icon.
2. Check that [TCP/IP → Name of your Ethernet card] and [Microsoft Network Client] are displayed in the [Network] screen. If those are not displayed, TCP/IP installation may fail. Check the installation referring to the instruction manual which comes with your Ethernet card.

## SETTING YOUR PC 3

[Windows Me] (continued from the previous page)



3. Click [TCP/IP] and then [Properties (R)].



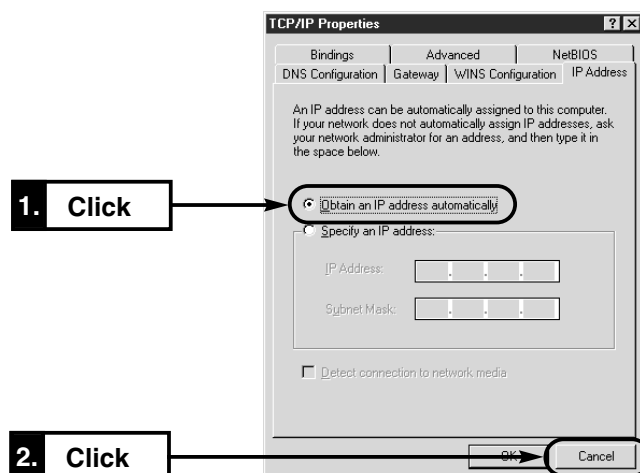
3

## 3 SETTING YOUR PC

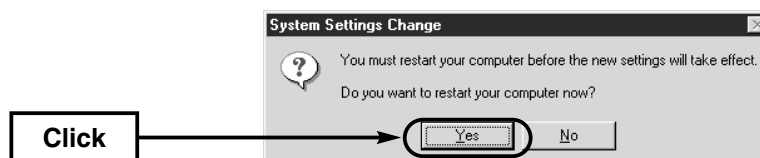
### 3-1 Connecting in Building Communication Mode

#### ■ Setting TCP/IP Protocol [Windows Me] (continued from the previous page)

4. Click the [Obtain an IP address automatically (O)] radio button and then [OK].



5. When you are prompted to restart your PC, click [Yes]. The specified setting is enabled when the PC has been restarted.

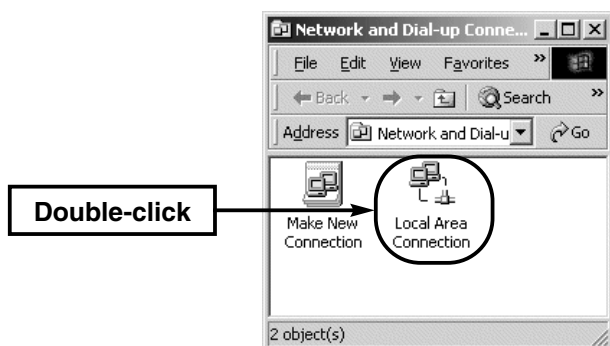


## SETTING YOUR PC 3

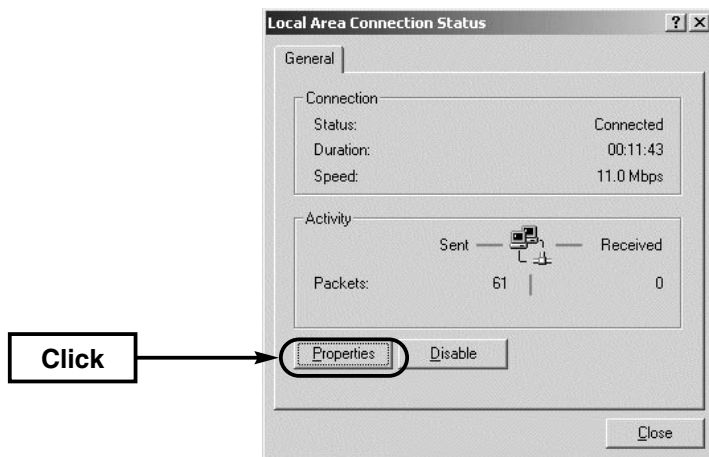
### ■ Setting TCP/IP Protocol (continued from the previous page)

#### [Windows 2000]

1. Start your PC.
  - The Windows 2000 log-on screen is shown.
2. Log on as the Administrator.
3. When the Windows 2000 desktop has been shown, select [Start] → [Setting (S)] → [Network and Dial-up Connections (N)] → [Local Area Connection] icon which shows your Ethernet card name.



4. Click [Properties (P)].

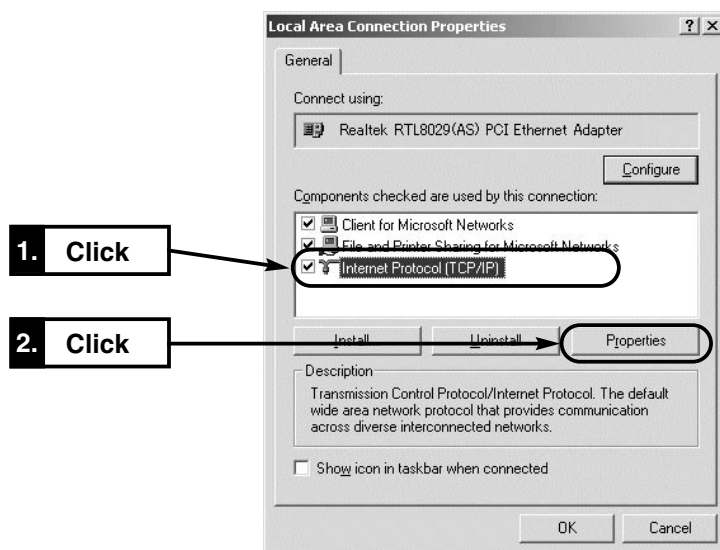


## 3 SETTING YOUR PC

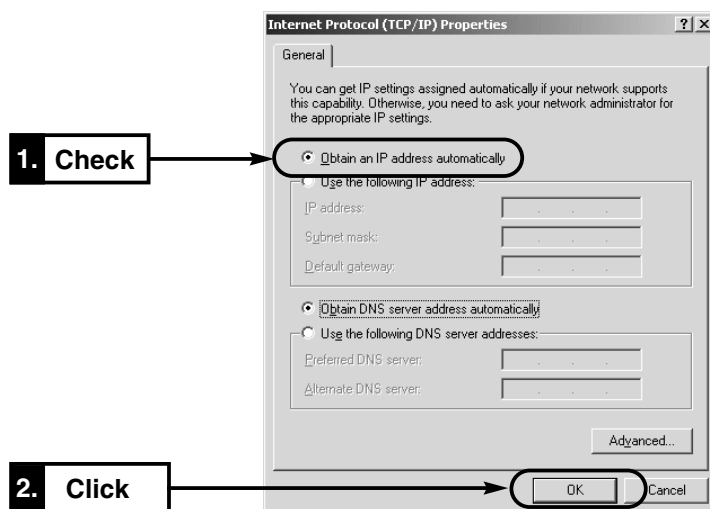
### 3-1 Connecting in Building Communication Mode

#### ■ Setting TCP/IP Protocol [Windows 2000] (continued from the previous page)

5. If [Internet Protocol (TCP/IP)] is shown, click [Internet Protocol (TCP/IP)] and then [Properties (R)].



6. Check that [Obtain an IP address automatically (O)] is selected and click [OK] to enable the specified setting.

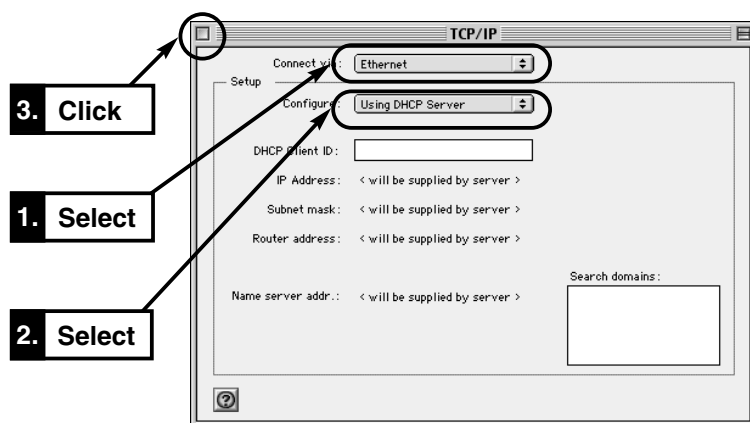




## SETTING YOUR PC 3

### [Mac OS]

1. Start your PC.
2. When your PC has started up, select [Apple Menu] → [Control Panel] → [TCP/IP].
3. Specify "Ethernet" as [Connect to] and "Using DHCP Server" as [Configure].
4. Click the Close Box on the title bar.
  - The screen is closed and the setting screen is saved.



## 3 SETTING YOUR PC

### 3-2 Connecting through Wireless Access Point

This section describes the setting to connect to SB-110 through a wireless access point. The available operating system is Windows 98, Windows 98SE, Windows Me and Windows 2000.

|               |   |           |
|---------------|---|-----------|
| <b>Step 1</b> | <b>Preparing Wireless LAN Card</b>            | <b>22</b> |
| <b>Step 2</b> | <b>Setting TCP/IP</b>                         | <b>22</b> |
| <b>Step 3</b> | <b>Setting Wireless LAN Card</b>              | <b>27</b> |
| <b>Step 4</b> | <b>Preparing WWW Browser</b>                  | <b>28</b> |
| <b>Step 5</b> | <b>Checking IP Address Assigned by SB-110</b> | <b>29</b> |

#### ■ Preparing Wireless LAN Card

If SB-110 is set to the Access Point mode (☞ 4-3), mount any wireless LAN card specified by us to your PC which can be connected to SB-110 by wireless. If the PC has no PCMCIA slot, you need to mount out wireless LAN card adapter to the PC. Mount it according to the instruction manual which comes with the wireless LAN card adapter

\* If the PC has the USB port only, use our wireless LAN unit (SU-11) to communicate with SB-110 by wireless.

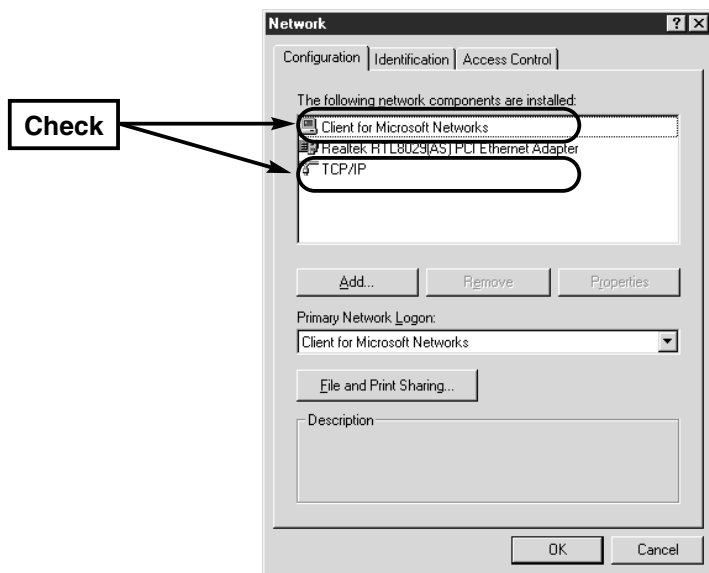
#### ■ Setting TCP/IP Protocol

You need to install a network protocol module (driver) called "TCP/IP" in every PC which communicates with SB-110. Install the driver referring to the instruction manual of your wireless LAN card.

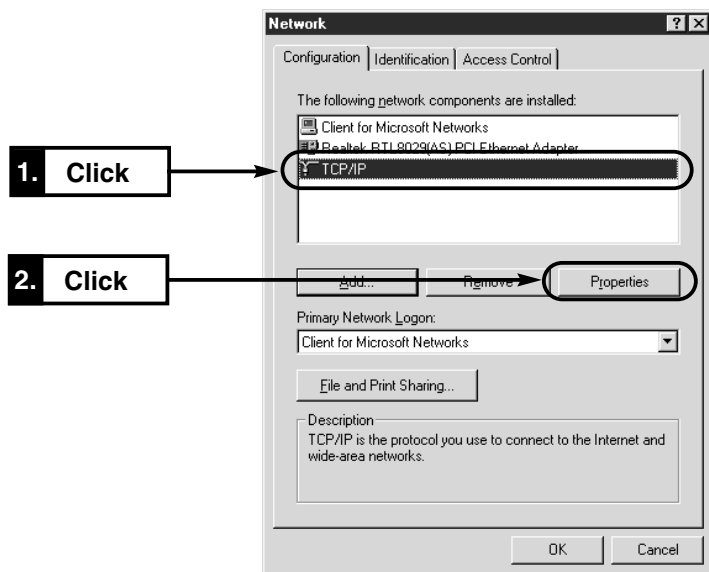
##### [Windows Me]

1. Select [Start] → [Setting (S)] → [Control Panel (C)] → [Network] icon.
2. Check that [TCP/IP → Name of your wireless LAN card] and [Microsoft Network Client] are displayed in the [Network] screen. If those are not displayed, TCP/IP installation may fail. Check the installation referring to the instruction manual of your wireless LAN card.

## SETTING YOUR PC 3



3. Click [TCP/IP] and then [Properties (R)].

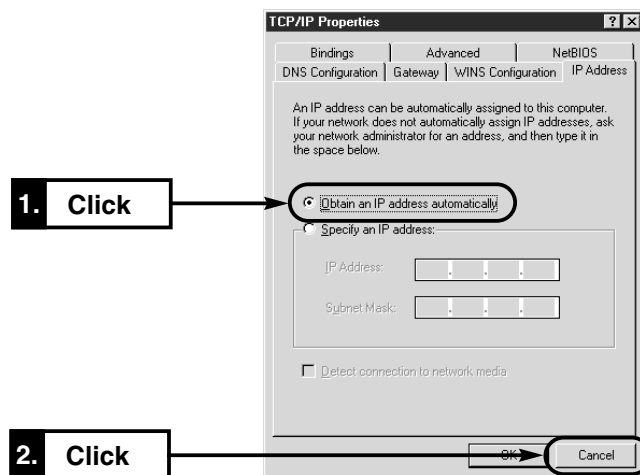


## 3 SETTING YOUR PC

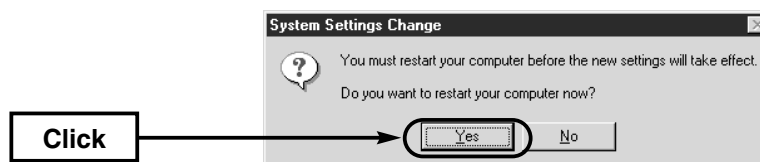
### 3-2 Connecting through Wireless Access Point

#### ■ Setting TCP/IP Protocol [Windows Me] (continued from the previous page)

4. Click the [Obtain an IP address automatically (O)] radio button and then [OK].



5. When you are prompted to restart your PC, click [Yes]. The specified setting is enabled when the PC has been restarted.

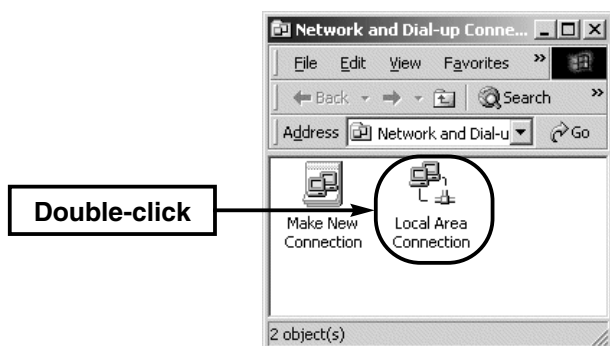


## SETTING YOUR PC 3

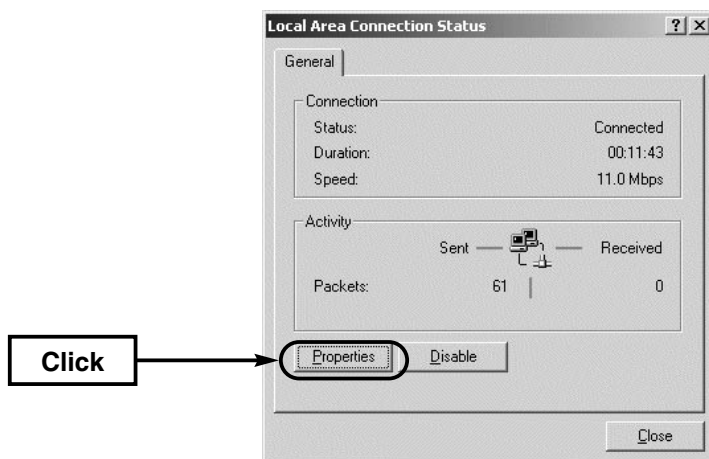
### ■ Setting TCP/IP Protocol (continued from the previous page)

#### [Windows 2000]

1. Start your PC.
  - The Windows 2000 log-on screen is shown.
2. Log on as the Administrator.
3. When the Windows 2000 desktop has been shown, select [Start] → [Setting (S)] → [Network and Dial-up Connections (N)] → [Local Area Connection] (which shows your Ethernet card name).



4. Click [Local Area Connection] which shows your wireless LAN card connecting SB-110.

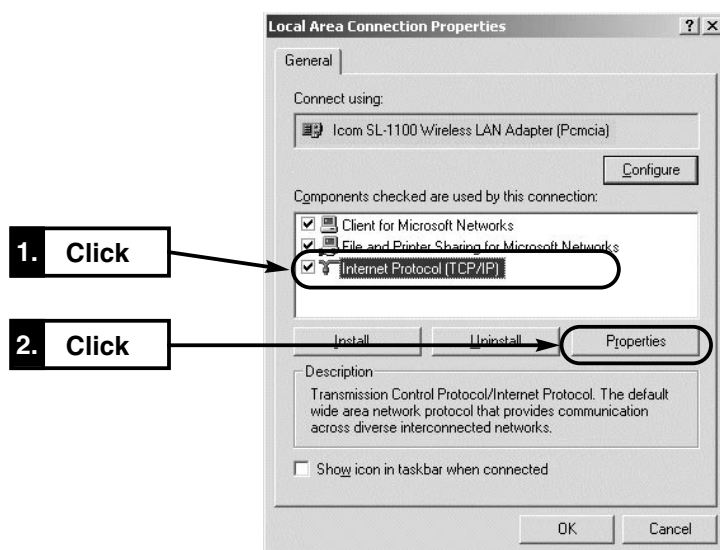
**3**

## 3 SETTING YOUR PC

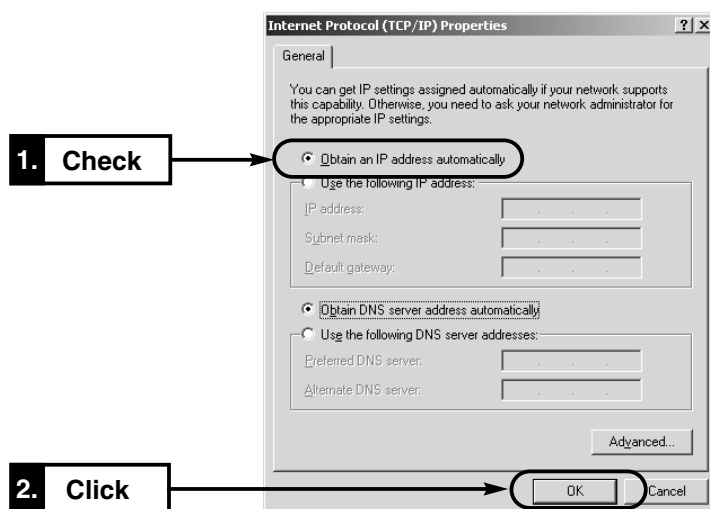
### 3-2 Connecting through Wireless Access Point

#### ■ Setting TCP/IP Protocol [Windows 2000] (continued from the previous page)

5. If [Internet Protocol (TCP/IP)] is shown, click [Internet Protocol (TCP/IP)] and then [Properties (R)].



6. Check that [Obtain an IP address automatically (O)] is selected and click [OK] to enable the specified setting.



## SETTING YOUR PC 3

### 3-2 Connecting through Wireless Access Point

#### ■ Setting Wireless LAN Card

The values of the setting items below of your PC (PC/AT compatible machine) to be connected through the wireless LAN must be the same as those of SB-110. Change the set values of the PC according to the default setting of SB-110. For how to change the set values of PC, refer to the instruction manual of your wireless LAN card.

#### [Network Mode]

Communication is made to a repeater called "Wireless Access Point". Set your PC in the Infrastructure mode. The wireless communication mode of SB-110 needs to be changed (☞ see 4-3).

#### [ESS ID]

PCs with the same name are identified as the same work group on the wireless network. Change the PC setting into "LG". The default setting of SB-110 is "LG".

#### [Communication Channel]

This is disabled for the communication in the Infrastructure mode. The wireless communication is made according to the communication channel (☞ see 5-2) set in SB-110.

#### [WEP Function]

When communication is made through a wireless LAN, the communication data is encrypted. Disable the WEP security of your PC. The default setting of SB-110 is "Not Use WEP Key".

#### [△Remarks]

- Wireless communication to Macintosh is unavailable.
- Use a suitable wireless LAN card which supports SB-110. Otherwise, no communication can be made.
- Write down the value set in SB-110 exactly and be sure to set such value in all the devices to be communicated by wireless.
- While you are changing [Communication Channel], [ESS ID] or [WEP] of SB-110, communication from a PC connected to SB-110 through a wireless LAN becomes unavailable temporarily. The connection is ready again when the setting of every device becomes the same.
- When the WEP function is not used, a third party may connect from the outside. You may encounter a risk, e.g., unauthorized access, wiretapping, interference, data loss or memory crash. To avoid such risk, it is recommendable to use the WEP function without fail.
- To communicate with SB-110 by wireless through the WEP function, our wireless LAN card must be used.
- When an operation has become unstable during the wireless communication, move SB-110 or the PC or change the direction of them.
- When many PCs access the wireless LAN of SB-110 simultaneously, the communication speed may decrease considerably. The maximum number of wireless terminals used simultaneously is 256. However, it is recommendable to use ten terminals or less.

---

## 3 SETTING YOUR PC

### 3-3 Preparing WWW Browser

To set SB-110 through a WWW browser, Microsoft Internet Explorer 4.0 or later or Netscape Navigator 4.0 or later must be used. When you access the internet through a PC, whether it is connected by wireless or not, check the "proxy server function" is disabled in the browser setting.

If you want to use the proxy server, do not take SB-110 as an object of the proxy server according to the procedure below.

#### [Microsoft Internet Explorer 5.0]

The procedure to exclude SB-110 from the scope of the proxy server is as follows:

1. Select [Internet Options (O)] in the [Tool (I)] menu.
2. Click the [Connections] tab and then [LAN Settings (L)].
3. Check the [Use a proxy server (X)] check box and click [Advanced (C)].
4. Enter an address of the proxy server of your provider in the [HTTP (H)] text box in the [Servers] field.
5. Enter the IP address of SB-110 in the [Do not use proxy server for addresses beginning with (N):] text box in the [Exceptions] field. (Example: 192.168.0.1)

#### [Netscape 6.0]

The procedure to exclude SB-110 from the scope of the proxy server is as follows:

1. Select [Preferences (E)] in the [Edit (E)] menu.
2. Click [Advanced] and then [Proxies] in the [Category:] field of the [Preferences] dialog box.
3. Check the [Manual proxy configuration] radio button.
4. Enter an address of the proxy server of your provider in the [HTTP (H)] text box.
5. Enter the IP address of SB-110 in the [Do not use proxy server for domains beginning with (N):] text box. (Example: 192.168.0.1)



## SETTING YOUR PC 3

### 3-4 Checking IP Assigned Address

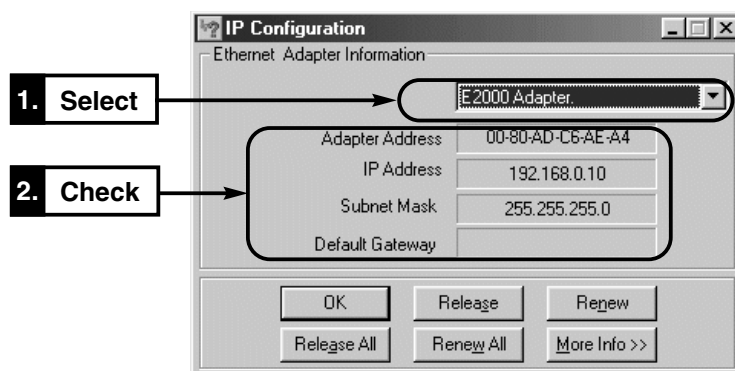
This section describes how to check an IP address assigned to a PC automatically by the DHCP server function. Check according to the instruction per operating system below.

#### [Windows Me]

Check an IP address with a program called "winipcfg.exe" contained in the Windows folder of the installed operating system.

#### <How to check>

1. Select [Start] → [Run (R)].
2. Type "winipcfg" in the [RUN] dialog box (half size) and press the [Enter] key.
3. Click ▼ in the text box and select a name of your Ethernet card or wireless LAN card.
  - When any IP address has been assigned to your PC by the DHCP server, it is displayed in the [IP Address] field.



#### <Items displayed on the screen>

- ◎ Adapter Address: MAC address of Ethernet card or wireless LAN card.
- ◎ IP Address: IP address of PC.
- ◎ Subnet Mask: Subnet mask of PC
- ◎ Default Gateway: IP address of network device specified as the default gateway.

#### **[ If automatic assignment fails ]**

If the network section of IP address of PC is different from that (192.168.0.1) of IP address of SB-110, the automatic IP address assignment may fail. Check the TCP/IP protocol settings of your Ethernet card or wireless LAN card and the cable connection and restart the PC.

When the PC has restarted, check the IP address again according to the procedure above.

## 3 SETTING YOUR PC

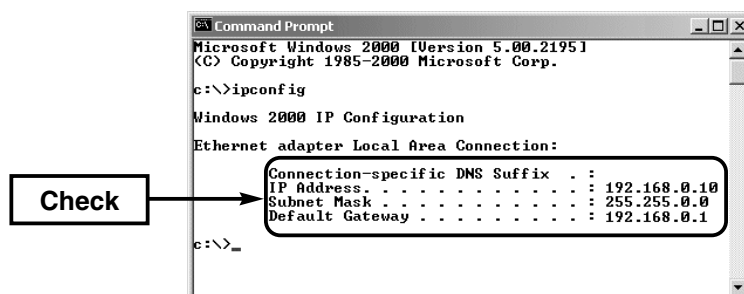
3-5 Checking IP Assigned Address (continued from the previous page)

### [Windows 2000]

Execute "ipconfig" in the Command Prompt screen.

#### <How to check>

1. Select [Start] → [Programs (P)] → [Accessories] → [Command Prompt].
2. Type "ipconfig" in the Command Prompt screen and press the [Enter] key.
  - \* For the details of the command line options, refer to the description shown by typing "ipconfig /?".
3. The IP address assigned to the PC is displayed on the screen.



## SETTING YOUR PC 3

### [Mac OS]

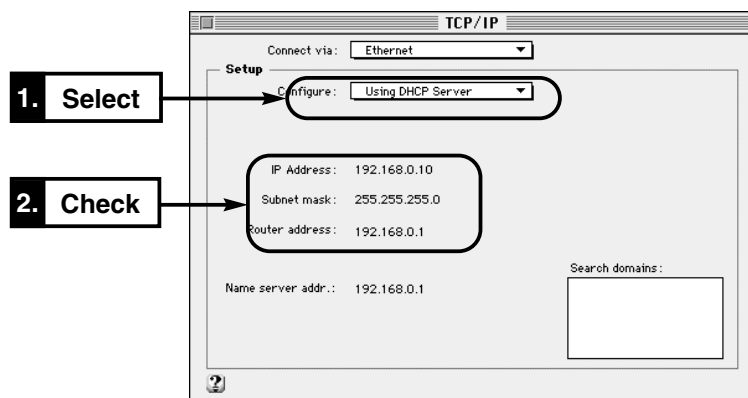
Even when the PC has started up, the DHCP server does not give the IP address until communication is made actually (i.e., until you access the internet or you access a mail server). When <Refer to a server> is displayed on each item on the screen shown by the procedure below, perform the communication once and then check again.

\* The operation screen or any other details may vary depending on your operating system version.

#### <How to check>

1. Select [Apple Menu] → [Control Panel] → [TCP/IP].

- If any IP address is assigned to the PC by the DHCP server, it is displayed on the [IP Address] field.

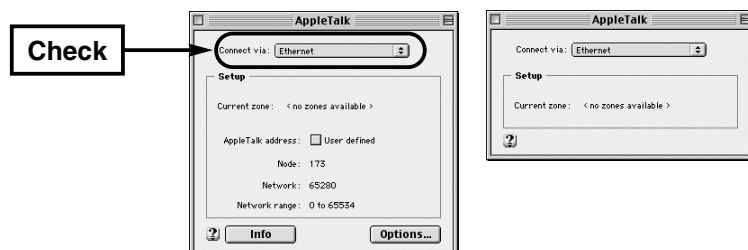


3

2. To check the MAC address, select [Apple Menu] → [Control Panel] → [AppleTalk].

Then, either of the screens below is shown. Select "Ethernet" in the [Connect via:] field.

\* To show the left screen when the right screen is shown, select [Menu] in the menu bar, [User Mode] and then [Advanced].



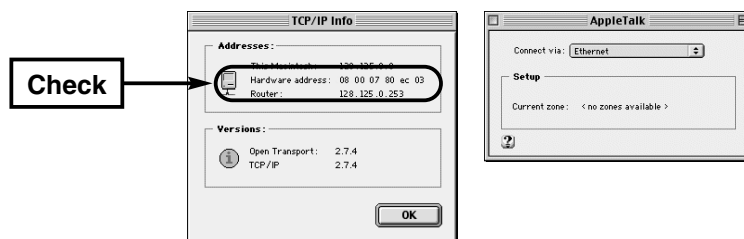
## 3 SETTING YOUR PC

### 3-5 Checking IP Assigned Address

[Mac OS] (continued from the previous page)

#### 3. Click [Info].

To show the left screen when the right screens is shown, select [File] in the menu bar and then [Get Info].



## SETTING SB-110

## CHAPTER 4

This chapter describes the setting procedure to use SB-110 for the first time or to initialize the entire configuration. To perform setting using a WWW browser from a PC connected to SB-110 by wireless, you need to change the communication mode (☞ see 4-3) from another PC connected to SB-110 through a hub as a first step. Moreover, check that the details of wireless LAN setting of the PC comply with those of SB-110 (☞ see page 27).

---

|   |    |
|---|----|
| 4-1. Turning on SB-110 and PC.....                        | 34 |
| 4-2. Showing Setting Screen .....                         | 35 |
| 4-3. Changing Wireless Communication Mode .....           | 36 |
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| 4-6. Changing Automatic Assignment Start IP Address ..... | 39 |

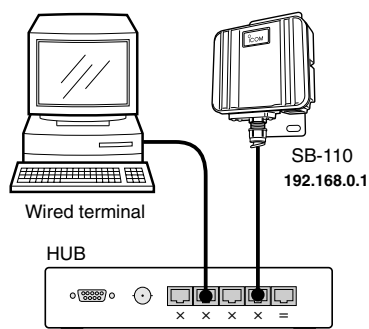
## 4 SETTING SB-110

### 4-1 Turning on SB-110 and PC

Through a hub, connect SB-110 to a PC used for setting.

#### [Remarks]

- In the default setting, a wireless terminal cannot connect to SB-110 through an access point (☞ see 4-3).
- When you set SB-110, even if SB-110 is used for several PCs on a network, disconnect one of those PCs from the network.
- The PC used to set SB-110 should be configured according to "Connecting in Building Communication Mode" (☞ see 3-1). Then, the IP address of wired terminal is obtained from SB-110 automatically.



1. Turn on SB-110 and the hub.
2. Check that the [PWR] (Green) indicator and [LAN] (Red) indicator turn on. If one of or both of them turns off, check that the device power supply and cables are connected correctly.
3. Turn on the PC connected to the hub.
4. Check that the IP address is assigned from SB-110 (☞ 3-4).
  - \* When the IP address is not assigned, the SB-110 setting screen cannot be shown. Check the TCP/IP setting, etc. in "Connecting in Building Communication Mode" (☞ 3-1) again.

## SETTING SB-110 4

### 4-2 Showing Setting Screen

#### <How to operate>

1. Start a WWW browser.
  - \* This WWW browser is Internet Explorer 5.0.
2. Specify "http://192.168.0.1" (default setting). This is URL of SB-110.
  - The [Wireless LAN Settings] screen is shown.

#### ■ [Wireless LAN Settings] Screen

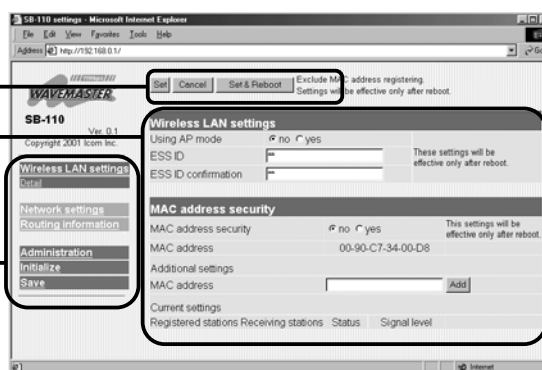
[Set] / [Cancel] /

[Set & Reboot] Button

Setting Screen Display Area

Setting Screen

Selection Menu



#### ■ Setting Screen Selection Menu

All the Setting Screen titles are shown. When you click any of the titles, the corresponding screen is shown.

- **Wireless LAN settings (Detail settings)**

Set the wireless communication mode, WEP and MAC address security.

- **IP address**

Set the routing mode, IP address of SB-110 and DHCP server.

- **Routing function**

Set when you define packet routing.

- **Administration**

Set the manager ID, SYSLOG function and operation to upgrade SB-110.

- **Initialize**

Set when you return the configuration SB-110 to a default state.

- **Save**

Operate when you check the details of SB-110 setting or when you save such details as a configuration file.

- **[Set] / [Cancel] / [Set & Reboot]**

Register the details of setting in the displayed menu screen or cancel them. When you restart the system to enable the details of setting, operate the [Set & Reboot] button.

- **Setting Screen Display Area**

A screen selected in the Setting Screen Selection menu is shown.

## 4 SETTING SB-110

### 4-3 Changing Wireless Communication Mode

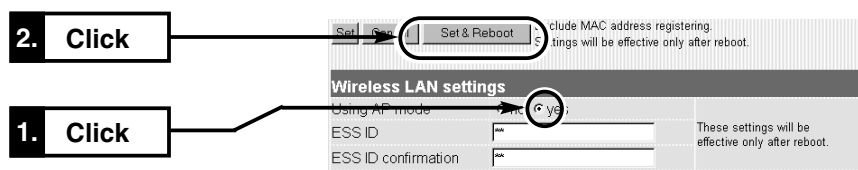
When you use SB-110 as an wireless access point, change the setting according to the procedure below.

#### 【△Remarks】

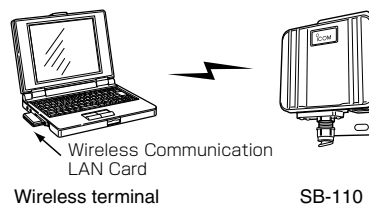
Wireless communication to Macintosh is unavailable.  
Before making the wireless connection, turn on SB-110.

#### <How to change>

1. Access the SB-110 setting screen according to the procedure described in 4-1 and 4-2.
  - The [Wireless LAN Settings] screen is shown.
2. Operate as follows:  
The default value of any other items should not be changed.  
\* ESS ID of SB-110 is set to "LG" (upper case, falf size) as a default value. Check ESS ID of your wireless LAN card before connecting SB-110.



3. SB-110 restarts and operates in the Access Point mode.
4. Prepare a PC to which you want to mount our wireless LAN card.
5. This PC must be configured according to the description of "Connecting through Wireless Access Point" (see 3-2). When you start the PC, the IP address is obtained from SB-110 automatically.
  - The [⚡] indicator of SB-110 turns on in red.
6. Specify "http://192.168.0.1" (default setting). This is URL of SB-110.
  - The [Wireless LAN Settings] screen is shown.



#### 【 Wireless Access Point Mode】

If you change the SB-110 setting so that the Routing mode (see 5-3) is enabled in advance, URL to show the setting screen of SB-110 which operates in the Wireless Access Point mode is as follows:

- Wired terminal: <http://192.168.0.1> (default setting)
- Wireless terminal: <http://192.168.1.1> (default setting)



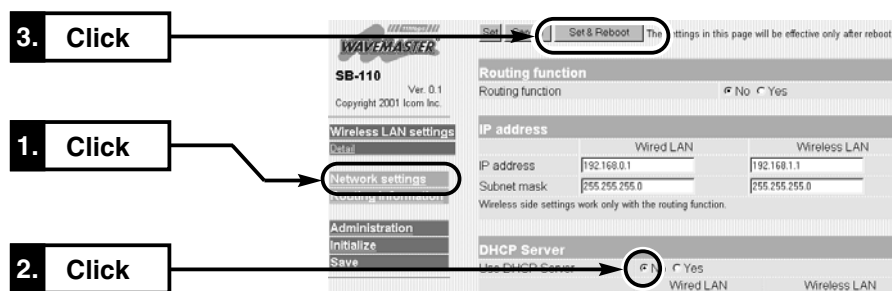
## SETTING SB-110 4

### 4-4 Stopping DHCP Server

When you connect to any existing network which operates with the DHCP server function, you need to stop the DHCP server of SB-110 depending on your network environment.

#### <How to stop>

1. Access the SB-110 setting screen according to the procedure described in 4-1 and 4-2.
  - The [Wireless LAN Settings] screen is shown.
2. Click [IP address] in the left frame.
  - The [IP address] screen is shown.
3. Click the [No] radio button in the [Use DHCP Server] field in the [DHCP Server] (in the right frame). Then, click [Set & Reboot].
  - "Now rebooting" is displayed on the screen and the specified details are enabled.



4. Change the IP address of SB-110 and of PC according to the IP address assignment specified in an existing network (see 4-5) and then restart the system.

## 4 SETTING SB-110

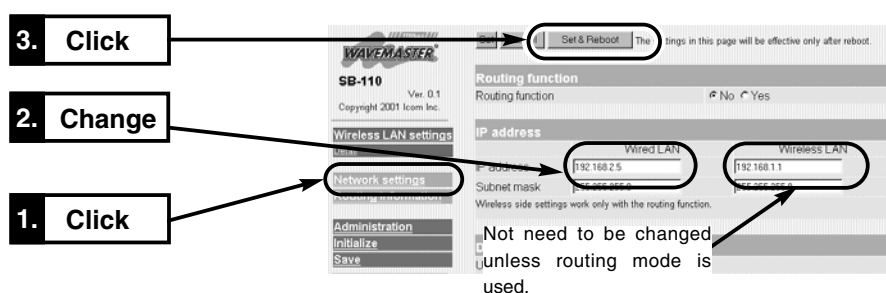
### 4-5 Changing IP Address Of SB-110

If SB-110 is used in the default setting when you connect an existing LAN, the IP address of SB-110 may be the same as that assigned to an existing network device. This section describes how to change the IP address of SB-110.

\* When you change the network section of the IP address, if the DHCP server of SB-110 is enabled, you need to change also the network section of the automatic assignment start IP address referring "Changing Automatic Assignment Start IP Address" (see 5-9).

#### <How to change.

1. Access the SB-110 setting screen according to the procedure described in 4-1 and 4-2.
  - The [Wireless LAN Settings] screen is shown.
2. Click [IP address] in the left frame.
  - The [IP address] screen is shown.
3. Change the IP address of SB-110 and click [Set & Reboot].
  - "The IP address has been changed. Change the computer setting." is displayed on the screen.



4. If the DHCP server function of SB-110 is enabled, obtain the IP address again using "winipcfg.exe" (see 3-4) or restart the PC. If the IP address is assigned to the PC manually, change the IP address of the network section of such PC according to that of SB-110

#### **[ How to Assign IP Address ]**

The IP address consists of two elements, i.e., the network section and host section. For "192.168.0.1" (Class C) which is the default IP address of SB-110, the first part "192.168.0" is the network section and the second one "1" is the host section. Any network devices (e.g., PC etc.) which have the same network section are presumed to be on the same network. Every network device on the same network is identified by the host section.

So, when you assign the IP address, consider the following rules:

- Every network device located on the same network must have the same network section.
- Every network devices be located on the same network must have the unique host section.
- Do not assign any network address (the first position of the host section, "0").
- Do not assign any broadcast address (the last position of the host section, "255").

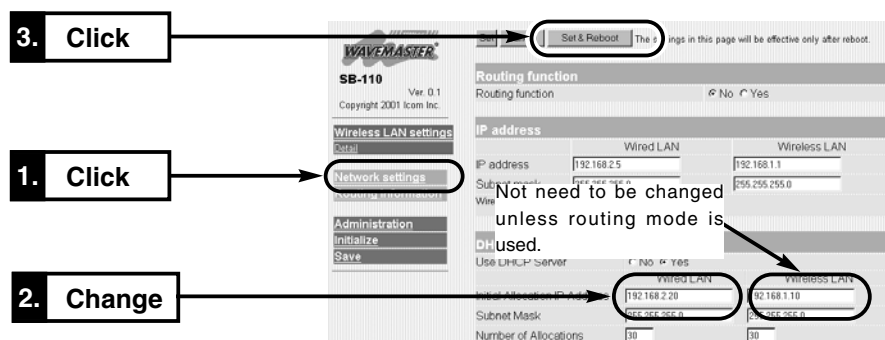
## SETTING SB-110 4

### 4-6 Changing Automatic Assignment Start IP Address

If the network section of the IP address of SB-110 is changed to enable the DHCP server function of SB-110, the network section of the automatic assignment start IP address also must be changed. This section describes how to change the automatic assignment start IP address.

#### <How to change>

1. Access the SB-110 setting screen according to the procedure described in 4-1 and 4-2.
  - The [Wireless LAN Settings] screen is shown.
2. Click [IP address] in the left frame.
  - The [IP address] screen is shown.
3. Change the automatic assignment start IP address and click [Set & Reboot].
  - "Now rebooting" is displayed on the screen and the specified details are enabled.



4. If the DHCP server function of SB-110 is enabled, obtain the IP address again using "winipcfg.exe" (see 3-4) or restart the PC.

4

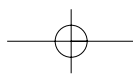
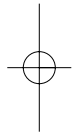
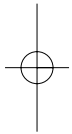
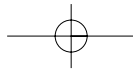
#### 【 DHCP Server Function】

If the DHCP server function of SB-110 is enabled (the default setting), the IP address can be obtained from SB-110 automatically when a PC has been connected to SB-110.

When you connect SB-110 to an existing LAN, the IP address assigned by SB-110 must be different from the fixed IP address assigned to any existing network device (e.g., PC etc). Moreover, the network section must be the same as that of the IP address of SB-110.

#### 【 The Number of IP Addresses Assigned Automatically】

The number of IP address assigned by SB-110 automatically is 5 to 128. For the default assignment start IP address and subnet mask set value, the maximum number of IP addresses which can be assigned logically is 254. However, if you assign 128 addresses or more, those addresses should be assigned to the clients manually.



This chapter describes every item in the SB-110 setting screen.

---

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## 5 SETTING SCREEN

### 5-1 [Wireless LAN settings] Screen

#### ■ Wireless LAN setting

##### Setting for wireless section of SB-110.

| Wireless LAN settings |   |
|-----------------------|---|
| Using AP mode ①       | <input checked="" type="radio"/> no <input type="radio"/> yes |
| ESS ID ②              | <input type="text"/>  |
| ESS ID confirmation ③ | <input type="text"/>  |

These settings will be effective only after reboot.

#### ① Using AP mode.....

Select a wireless communication mode (default setting: no).

- [no]: Select for the Building Communication (Bridge) mode.
- [yes]: Select for the Access Point mode.

#### ② ESS ID.....

Enter an ID to prevent an unauthorized access to the wireless LAN connected to SB-110. This ID is case-sensitive. Enter a maximum of 31 alphanumeric characters (default ID: LG).

The entered characters are all expressed as an asterisk (e.g., \*\*).

In the Building Communication mode (see 1-3), several SB-110s with the same [ESS] ID can be connected to each other by wireless. In the Access Point mode (see 1-4), SB-110 and a wireless terminal can be connected by wireless.

To enable the changed settings, you need to reboot SB-110.

#### ③ ESS ID confirmation...

To prevent an error in typing the ID, enter the [ESS ID] again in this field. Please note that the ID is case-sensitive. (The entered ID is expressed as an asterisk, e.g., \*\*.)

## SETTING SCREEN 5

5-1 [Wireless LAN settings] Screen (continued from the previous page)

### ■ MAC Address security setting

Register the MAC address display of SB-110 and the MAC address of device to be connected by wireless and restrict the connection.

| MAC address security |                    |   |  |
|----------------------|--------------------|---|--|
| MAC address security | ①                  | <input checked="" type="radio"/> no <input type="radio"/> yes | This settings will be effective only after reboot. |
| MAC address          | ②                  | 00-90-C7-34-00-D8   |  |
| Additional settings  |                    |   |  |
| MAC address          | ③                  | <input type="text"/>  | <input type="button" value="Add"/>                 |
| Current settings     |                    |   |  |
| Registered stations  | Receiving stations | Status  | Signal level                                       |
| 00-90-C7-33-00-14    |                    | Online  | 144  |

#### ① Mac address security .....

Specify whether only SB-110 with the same MAC address as one registered in advance or wireless terminal with such same MAC address can be connected to SB-110 or not (default setting: no).

\* To enable the setting change, click [Set & Reboot].

#### ② MAC address .....

The MAC address registered in the wireless section of SB-110 is displayed here. This MAC address is also the MAC address of SB-110.

\* If any address is displayed here, please contact the shop or our service section.

#### ③ Additional settings

Enter the MAC address of target SB-110 or wireless terminal in this field.

\* A maximum of 256 MAC addresses can be registered.

\* A maximum of 12 characters (half size) can be entered.

\* When you have enter the MAC address, click [Add] to check that the address has been registered in the [Current settings] field.

\* The following two types of character strings are considered as the same address.

11-11-11-22-33-33, 1111112233

## 5 SETTING SCREEN

### 5-1 [Wireless LAN settings] Screen

#### ■ MAC Address security setting (continued from the previous page)

| MAC address security |                    |   |  |
|----------------------|--------------------|---|--|
| MAC address security | ①                  | <input type="radio"/> No <input checked="" type="radio"/> Yes | This settings will be effective only after reboot. |
| MAC address          | ②                  | 00-90-C7-34-00-D8   |  |
| Additional settings  | ③                  |   |  |
| MAC address          |                    | <input type="text"/>  | <input type="button" value="Add"/>                 |
| Current settings     | ④                  |   |  |
| Registered stations  | Receiving stations | Status  | Signal level                                       |
|                      | 00-90-C7-33-00-14  | Online  | 144  |
|                      |                    |   | <input type="button" value="Add"/>                 |

#### ④ **Current settings** ...

The status of device communicating to SB-110 by wireless and the MAC address of registered wireless communication device are displayed here (default setting: no).

Any registered MAC address can be deleted by [Delete]. If the MAC address displayed in the [Receiving stations] field is not registered, it can be registered by clicking [Add].

\* If a numerical value 110 to 200 is displayed in the [Signal level] field, the communication status is good.

#### **[Remarks]**

Wireless communication to Macintosh is unavailable.  
Before making the wireless connection, turn on SB-110.



## SETTING SCREEN 5

### 5-2 [Detail settings] Screen

#### ■ Detail settings

Specify the details of the wireless section of SB-110.

| Detail settings (Version:P40003C0/T10003C7) |             |
|---|-------------|
| Channel                                     | ① 11        |
| Transmit Rate                               | ② Automatic |
| Rts/Cts Threshold                           | ③ None      |
| Security Level                              | ④ None      |
| Key Generator                               | ⑤           |

Rate setting is ineffectual in the AP-MODE.

#### ① Channel

Specify a channel to be used for the wireless communication of SB-110 (default setting: 11).

\* If several SB-110s are communicated to each other in the Building Communication mode (☞ see 1-3), specify the same value for those SB-110s.

\* A wireless terminal which communicates to our 11 Mbps wireless LAN card in the Access Point mode (☞ see 1-4) detects the channel of SB-110 automatically when communicating.

#### ② Transmit Rate

Specify the wireless transmission rate in the Building Communication mode (default setting: Automatic).

This setting is disabled in the Access Point mode.

\* Regardless of this setting, any data can be received in the wireless transmission rate of 1 to 11 Mbps.

#### ③ Rts/Cts Threshold

Specify "500 bytes" or "1000 bytes" as the size of packet sent for negotiation (default setting: None).

When the Rts/Cts (Request to send/Clear to send) Threshold is set, the decrease in communication speed can be prevented due to the influence of the hidden terminal (☞ see page 50).

## 5 SETTING SCREEN

### 5-2 [Detail settings] Screen

#### ■ Detail settings (continued from the previous page)

| Detail settings (Version: P40003C0/110003C7) |             |   |
|--|-------------|---|
| Channel                                      | ① 11        |   |
| Transmit Rate                                | ② Automatic |   |
| Rts/Cts Threshold                            | ③ None      | Rate setting is ineffectual in the AP-MODE. |
| Security Level                               | ④ None      |   |
| Key Generator                                | ⑤           |   |

#### ④ Security Level .....

Specify the percentage to encrypt a data sent through the wireless LAN to protect the data (Default setting: None). WEP (Wired Equivalent Privacy) is used as the encryption method. Except [WEP Key], all the items in [Custom Security] are set automatically according to the security level (Low, Middle or High) specified here. When "Custom" is selected, all the items displayed in [Custom Security] can be specified manually. [WEP Key] can be specified manually always.

\* It is advisable to set the same security level for all the communicating devices.

#### ⑤ Key Generator .....

Specify a character string to generate a key used for encryption and decryption. The entered characters are all expressed as an asterisk (e.g., \*\*).

After the registration, a key generated by the entered character string is displayed in the WEP key text box in [Custom Security].

\* Set the same character string (alphanumeric characters or symbols which are case-sensitive) for all the devices in communication. If different character string is set for all the communicating devices, the encrypted data cannot be decrypted.

## SETTING SCREEN 5

5-2 [Detail settings] Screen (continued from the previous page)

### ■ Custom Security

Specify the items (except [WEP Key]) below when "Customs" is selected in [Security Level] of [Detail Setting].

#### ① Decryption of Received Packet ...

Setting for decryption of received packet. Select any of "Yes", "No" and "Yes (Abandon any packet not encrypted)" (default setting: No).

#### ② Encryption of Transmitting Packet

Setting for encryption of transmitting packet. Select "Yes" or "No" (default setting: No).

#### ③ WEP Factor .....

Item to specify a security level. The value [0] means the highest security level (initial value: 0). The values means as follows:

- [0] = Changes an internal encryption key per packet.
- [1] = Changes an internal encryption key at every 10 packets.
- [2] = Changes an internal encryption key at every 50 packets.
- [3] = Changes an internal encryption key at every 100 packets.

## 5 SETTING SCREEN

### 5-2 [Detail settings] Screen

#### ■ Custom Security (continued from the previous page)

#### ④ Number of Encryption Bits.....

Specify the number of bits which encrypt the character string entered in [Key Generator] of [Detail Settings] (default setting: 64 bits).

When you select "64 bits", the low-order 40 bits (10-digit hexadecimal number of ) of the key generated by the character string entered in [Key Generator] are displayed in the [WEP Key] text box. Otherwise, you may enter a hexadecimal number within 10 digits in this text box directly.

When you select "128 bits", the low-order 104 bits are displayed in the [WEP Key] text box. Otherwise, you may enter a hexadecimal number within 26 digits in this text box directly.

\* When you enter the value in the [WEP Key] text box directly, such value is not displayed in the [Key Generator] text box. Also, the first 24 bits are never displayed.

---

## SETTING SCREEN 5

### 5-2 [Detail settings] Screen

#### ■ Custom Security (continued from the previous page)

##### ⑤ WEP Key .....

Specify a key and character string used for encryption (default setting: 1).

To encrypt data, use the alphanumeric characters of hexadecimal notation displayed in the checked [Key Selection] text box. The other party can decrypt the encrypted data (receive it correctly) only when the same alphanumeric characters of hexadecimal notation are displayed in any of text boxes next to the [Selection (Key)] numbers (1 to 4).

In each text box, enter directly a key (alphanumeric characters) of hexadecimal notation used for encryption and decryption by the other communication party. If the [Number of Encryption Bits] settings of the communicating devices are different from each others or if the contents of the text boxes of those communicating devices, which are used for the encryption and decryption, are different from each other, no communication can be made.

It is advisable to apply the same settings to all the text boxes of the communicating devices. If the contents of those text box are the same, the communication can be made between them even when their key numbers are different from each others.

\* You may enter data in each text box next to the [WEP Key], instead of the text box of [Key Generator] of [Detail Settings]. (In this case, any character string is not displayed in the text box of [Key Generator].)

\* For an example of setting, refer to page 52.

## 5 SETTING SCREEN

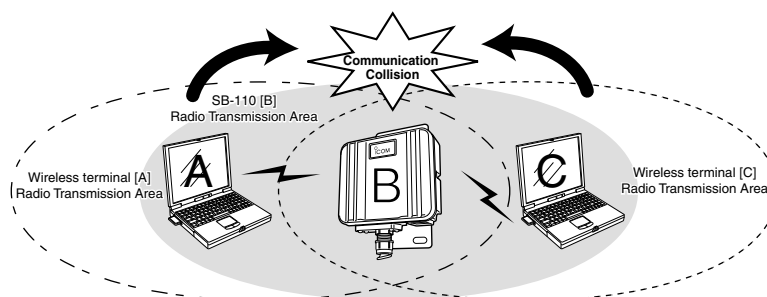
### 5-2 [Detail settings] Screen (continued from the previous page)

#### ■ Hidden Terminal

For the communication in the Access Point mode, as shown below, even if the terminals [A] and [C] can communicate with SB-110 [B], those terminals [A] and [C] cannot communicate with each other. In this case, the terminal [A] is referred to as "Hidden Terminal" to [C] and the terminal [C] is also referred to as "Hidden Terminal" to [A]. If there is any hidden terminal, the carrier sense does not function effectively to those wireless terminals. So, communication collision happens frequently in SB-110 [B] and the throughput (the amount of information transmitted within a specified period) decreases.

To prevent the communication collision, SB-110 [B] which received the request-to-send (Rts) signal sends the Clear-to-send (Cts) signal repeatedly to the wireless terminals [A] and [C]. Then, either of those two wireless terminals, which does not send Rts, can recognize that SB-110 [B] is communicating with the hidden terminal.

Now, the wireless terminal [A] or [C], which does not send Rts, forbears the access to SB-110 [B] and the communication collision can be prevented.



## SETTING SCREEN 5

5-2 [Detail settings] Screen (continued from the previous page)

### ■ Relation between [Security Level] and [Custom Security]

|                |        | WEP Setting             |                                  |                             | WEP Factor | Number of Encryption Bits |
|----------------|--------|-------------------------|----------------------------------|-----------------------------|------------|---------------------------|
|                |        | Decrypt received packet | Abandon any packet not encrypted | Encrypt transmitting packet |            |                           |
| Security Level | No     | Not decrypt             | Setting disabled                 | Not encrypt                 | Disabled   | Disabled                  |
|                | Low    | Decrypt                 | Not abandon                      | Encrypt                     | 3          | 64-bit encryption         |
|                | Middle | Decrypt                 | Abandon                          | Encrypt                     | 0          | 64-bit encryption         |
|                | High   | Decrypt                 | Abandon                          | Encrypt                     | 0          | 128-bit encryption        |

### ■ [Security Level] Setting

The table below shows the security level available for the communication between the terminals in which the security level is set.

(○: Communication can be made. ×: No communication can be made.)

\* If the character string of [Key Generator] of communicating devices is different from each others, no communication can be made even if the security level is the same.

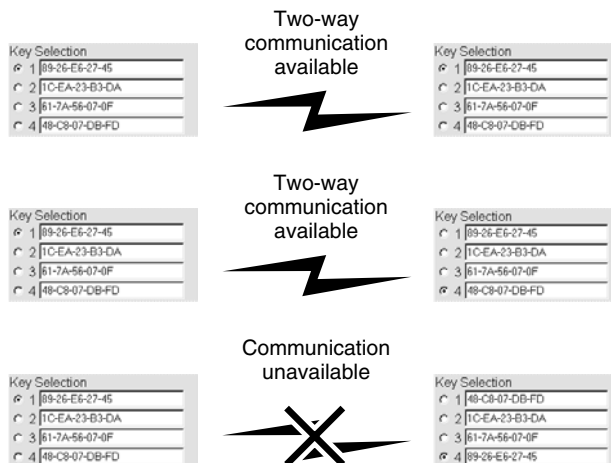
| Security Level | No | Low | Middle | High |
|----------------|----|-----|--------|------|
| No             | ○  | ×   | ×      | ×    |
| Low            | ×  | ○   | ○      | ×    |
| Middle         | ×  | ○   | ○      | ×    |
| High           | ×  | ×   | ×      | ○    |

## 5 SETTING SCREEN

5-2 [Detail settings] Screen (continued from the previous page)

### ■ Example of [WEP Key] Setting

When the WEP key is set for 64-bit encryption:





## SETTING SCREEN 5

### 5-3 [IP address] Screen

#### ■ Routing function

##### [△Remarks]

If the routing mode is used in the Access Point mode, any wireless terminal cannot be used for roaming because every device (SB-110) has its own unique network address.

Item to be set when connecting every communicating network through a different IP address of the network section.



Specify whether a routing function between a wired LAN and wireless LAN is enabled or disabled (default setting: No, i.e., disable).

Available protocol is TCP/IP only.

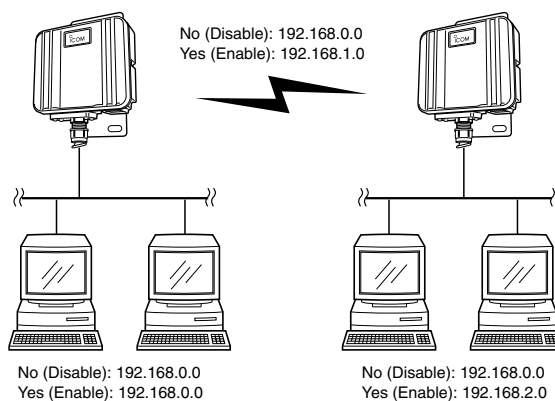
To enable the changed setting, you need to restart SB-110. If the routing mode is used, traffic of unnecessary broadcast can be minimized when communication is made.

\* When you select "No", you can set the IP address of the same network section between the wired LAN and wireless LAN.

\* When you select "Yes", you can set the IP address of a different network section between the wired LAN and wireless LAN.

#### ■ Conceptual Diagram

An upper part of the diagram shows an example of the address of each network when routing is not used. A lower part of the diagram shows an example of the address of each network when routing is used.



## 5 SETTING SCREEN

5-3 [IP address] Screen (continued from the previous page)

### ■ IP address

Setting for the IP address and subnet mask of SB-110.

| IP address  |                 |               |
|-------------|-----------------|---------------|
|             | ① Wired LAN     | Wireless LAN  |
| IP address  | ② 192.168.0.1   | 192.168.1.1   |
| Subnet mask | ③ 255.255.255.0 | 255.255.255.0 |

Wireless side settings work only with the routing function.

#### ① Wired LAN / Wireless LAN .....

The IP address and subnet mask set in the wired LAN are enabled only when the [Yes] radio button of [Routing function] is checked. If the [No] radio button of [Routing function] is checked (default setting), the IP address and subnet mask set in the wired LAN apply to the wireless LAN also.

#### ② IP address .....

Specify the IP address of wires LAN and wireless LAN of SB-110.

To enable the changed setting, you need to restart SB-110.

Wired LAN: 192.168.0.1 (default setting)

Wireless LAN: 192.168.1.1 (default setting)

#### ③ Subnet mask .....

Specify the subnet mask of wires LAN and wireless LAN of SB-110.

To enable the changed setting, you need to restart SB-110.

Wired LAN: 255.255.255.0 (default setting)

Wireless LAN: 255.255.255.0 (default setting)

## SETTING SCREEN 5

5-3 [IP address] Screen (continued from the previous page)

## ■ DHCP Server

Setting for the DHCP server function of SB-110.

| DHCP Server                   |   |                                       |
|-------------------------------|---|---------------------------------------|
| Use DHCP Server               | ① <input type="radio"/> No <input checked="" type="radio"/> Yes |                                       |
|                               | ② <input type="checkbox"/> Wired LAN                            | <input type="checkbox"/> Wireless LAN |
| Initial Allocation IP Address | ③ 192.168.0.10  | 192.168.1.10                          |
| Subnet Mask                   | ④ 255.255.255.0   | 255.255.255.0                         |
| Number of Allocations         | ⑤ 30  | 30                                    |
| Default Gateway               | ⑥   |                                       |
| Primary DNS Server            | ⑦   |                                       |
| Secondary DNS Server          | ⑧   |                                       |
| Primary WINS Server           | ⑨   |                                       |
| Secondary WINS Server         | ⑩   |                                       |
| Domain Name                   | ⑪   |                                       |
| Lease Period                  | ⑫ 3 days  |                                       |

Wireless side settings work only in the routing mode.

## ① Use DHCP Server ...

Specify whether SB-110 is used as the DHCP server or not (default setting: Yes).

If TCP/IP of PCs connected to SB-110 through cable or by wireless is set to [Obtain an IP address automatically], those PCs become the DHCP client of SB-110. By this function, the IP address/subnet mask and the IP address/domain name of router and DNS server obtained dynamically from SB-110 which is the DHCP server.

## ② Wired LAN / Wireless LAN .....

Every item set in the wired LAN in the [DHCP Server] screen is enabled only when the [Yes] radio button of [Routing function] is checked. If the [No] radio button of [Routing function] is checked (default setting), the values set in the wired LAN apply to the wireless LAN also.

## ③ Initial Allocation IP Address .....

Specify the initial IP address allocated automatically to the clients connected directly to SB-110 through cable or by wireless.

☉ Wired LAN: 192.168.0.10 (default setting)

☉ Wireless LAN: 192.168.1.10 (default setting)

## 5 SETTING SCREEN

### 5-3 [IP address] Screen

#### ■ DHCP Server (continued from the previous page)

| DHCP Server                   |   |  |
|-------------------------------|---|--|
| Use DHCP Server               | (1) <input type="radio"/> No <input checked="" type="radio"/> Yes |  |
|                               | (2) <input type="checkbox"/> Wired LAN                            | <input type="checkbox"/> Wireless LAN      |
| Initial Allocation IP Address | (3) <input type="text" value="192.168.0.10"/>                     | <input type="text" value="192.168.1.10"/>  |
| Subnet Mask                   | (4) <input type="text" value="255.255.255.0"/>                    | <input type="text" value="255.255.255.0"/> |
| Number of Allocations         | (5) <input type="text" value="30"/>                               | <input type="text" value="30"/>            |
| Default Gateway               | (6) <input type="text"/>  | <input type="text"/>                       |
| Primary DNS Server            | (7) <input type="text"/>  | <input type="text"/>                       |
| Secondary DNS Server          | (8) <input type="text"/>  | <input type="text"/>                       |
| Primary WINS Server           | (9) <input type="text"/>  | <input type="text"/>                       |
| Secondary WINS Server         | (10) <input type="text"/>   | <input type="text"/>                       |
| Domain Name                   | (11) <input type="text"/>   |  |
| Lease Period                  | (12) <input type="text" value="3"/> days                          |  |

Wireless side settings work only in the routing mode.

#### (4) Subnet Mask .....

Subnet mask to [Initial Allocation IP Address].

Wired LAN: 255.255.255.0 (default setting)

Wireless LAN: 255.255.255.0 (default setting)

#### (5) Number of Allocations .....

The maximum number of addresses which can be assigned continuously from the IP address specified in [Initial Allocation IP Address] is 5 to 128 (default setting: 30).

For the default set value of [Initial Allocation IP Address] and [Subnet Mask], the maximum number of IP addresses which can be assigned logically is 254. However, if you assign 128 addresses or more, those addresses should be assigned to the clients manually.

#### (6) Default Gateway ...

Default gateway noticed to a client.

#### (7) Primary DNS Server

When the [Yes] radio button of [Use DHCP Server] is checked, if there are two DNS server addresses, enter the either one in this field as necessary. Instead of the IP address of SB-110, the entered DNS server address is noticed to the DHCP client.

## SETTING SCREEN 5

### 5-3 [IP address] Screen

#### ■ DHCP Server (continued from the previous page)

| DHCP Server                   |   |   |
|-------------------------------|---|---|
| Use DHCP Server               | ① | <input type="radio"/> No <input checked="" type="radio"/> Yes |
|                               | ② | Wired LAN      Wireless LAN                                   |
| Initial Allocation IP Address | ③ | 192.168.0.10      192.168.1.10                                |
| Subnet Mask                   | ④ | 255.255.255.0      255.255.255.0                              |
| Number of Allocations         | ⑤ | 30      30  |
| Default Gateway               | ⑥ |   |
| Primary DNS Server            | ⑦ |   |
| Secondary DNS Server          | ⑧ |   |
| Primary WINS Server           | ⑨ |   |
| Secondary WINS Server         | ⑩ |   |
| Domain Name                   | ⑪ |   |
| Lease Period                  | ⑫ | 3 days  |

Wireless side settings work only in the routing mode.

#### ⑧ Secondary DNS Server .....

Similarly with [Primary DNS Server] above, enter the either of the two DNS server address in this field as necessary.

#### ⑨ Primary WINS Server .....

If you use a WINS server in the Microsoft network, enter the WINS server address in this field. If there are two WINS server addresses, enter the either one as necessary.

#### ⑩ Secondary WINS Server .....

Similarly with [Primary WINS Server] above, if there are two WINS server addresses, enter the either one in this field as necessary.

#### ⑪ Domain Name .....

Enter a domain name of a network address noticed to a client by the DHCP server, when the domain name is used for Ethernet, if necessary.

#### ⑫ Lease Period .....

Enter the number of days (1 to 99) as intervals that the DHCP server updates the local IP address of client automatically and periodically (default setting: 3).

## 5 SETTING SCREEN

5-3 [IP address] Screen (continued from the previous page)

### ■ Static DHCP Server Setting to fix the IP address assigned to a specific client.

| Static DHCP Server                                    |                      |   |
|---|----------------------|---|
| Additional settings                                   |                      |   |
| MAC Address   | IP Address           | Wired LAN / Wireless LAN  |
| <input type="text"/>                                  | <input type="text"/> | <input type="button" value="Add"/> / <input type="button" value="Add"/> |
| Wireless side settings work only in the routing mode. |                      |   |
| Current settings                                      |                      |   |
| MAC Address   | IP Address           | Wired LAN / Wireless LAN  |

Field to register the combination of the MAC address and IP address of a PC when fixing the IP address, which is assigned automatically using the DHCP server, to a specific client.

- \* A maximum of 16 combinations can be registered in this field. The client IP address to be registered must be out of the address range assigned by the DHCP server function.
- \* To register the details of wired terminal, click [Add] of [Wired LAN]. To register the details of wireless terminal, click [Add] of [Wireless LAN].
- \* The registration of wireless terminal is enabled only when the [Yes] radio button of [Routing function] is checked.

### ■ Example of Registration

When the [Yes] radio button of [Routing function] is checked.

To cancel the registration, click [Delete] in an applicable field.

| Current settings  |              |                                       |
|-------------------|--------------|---------------------------------------|
| MAC Address       | IP Address   | Wired LAN / Wireless LAN              |
| 00-80-AD-C6-AE-A4 | 192.168.0.60 | <input type="button" value="Delete"/> |
| 00-90-C7-11-11-11 | 192.168.1.60 | <input type="button" value="Delete"/> |

---

**SETTING SCREEN 5**
**5-4 [Routing function] Screen****■ RIP**

Specify when exchanging routing information with an adjacent router or access point by using the RIP function to create a route dynamically.

| RIP     |   |
|---------|---|
| Use RIP | <input type="radio"/> No <input checked="" type="radio"/> Yes |

Specify whether the RIP function is used or not (default setting Yes).

When the RIP is used, an RIP packet is broadcasted at approximately 30 seconds using the broadcast address of the access point.

\* When you have changed this setting, click the [Set & Reboot] button to enable the change.

**■ Network Interface List**

Refer to the description of [Path] of [IP Routing Information] (see page 60).

| Network Interface List |             |               |
|------------------------|-------------|---------------|
| Interface              | IP Address  | Subnet Mask   |
| local                  | 192.168.0.1 | 255.255.255.0 |

## 5 SETTING SCREEN

5-4 [Routing function] Screen (continued from the previous page)

### ■ IP Routing Information

This screen shows the information about a router or terminal to which another router sends a packet. The screen shows a path added in [Static Route] also.

| Destination   | Net Mask        | Gateway         | Path  | Creation Type | Metric |
|---------------|-----------------|-----------------|-------|---------------|--------|
| 192.168.0.0   | 255.255.255.0   | 192.168.0.1     | local | static        | 0      |
| 192.168.0.0   | 255.255.255.255 | 255.255.255.255 | local | misc          | 0      |
| 192.168.0.1   | 255.255.255.255 | 192.168.0.1     | local | static        | 0      |
| 192.168.0.255 | 255.255.255.255 | 255.255.255.255 | local | misc          | 0      |

- ① **Destination** ..... Shows the IP address of destination of packet routing.
- ② **Subnet mask** ..... Shows the subnet mask to the IP address of destination of packet routing.
- ③ **Gateway** ..... Shows the gateway to the IP address of destination of packet routing.
- ④ **Path** ..... Shows the transfer destination interface to the IP address of destination of packet routing. The details of such interface are shown in the [Network Interface List] screen (see page 59).
- ⑤ **Creation Type** ..... Shows how routing information was created.
- static : Created according to a static route (which was defined).
  - rip : Created according to a dynamic route (which was generated automatically).
  - misc : Created by a frame operation related to broadcast.
- ⑥ **Metric** ..... Shows the cost of path.



## SETTING SCREEN 5

5-4 [Routing function] Screen (continued from the previous page)

### ■ Static Route

**Routing table to define a relay path of packet intentionally. A maximum of 20 items can be registered.**

\* When you have entered data, click [Add] to check that the data has been registered in the [Current setting] field. The details of registered data are displayed also in the [IP Routing Information] screen.

| Static Route     |             |          |         |        |
|------------------|-------------|----------|---------|--------|
| ①                | ②           | ③        | ④       | ⑤      |
| Path             | Destination | Net Mask | Gateway | Metric |
| ethernet         |             |          |         |        |
| Add              |             |          |         |        |
| Current settings |             |          |         |        |
| Path             | Destination | Net Mask | Gateway | Metric |

① **Path** .....

- **local:** Shown when the [No] radio button of [Routing function] is checked. This means that routing information to be registered is at the LAN side.
- **ethernet:** Shown when the [Yes] radio button of [Routing function] is checked. This means that routing information to be registered is a wired LAN.
- **wireless:** Shown when the [Yes] radio button of [Routing function] is checked. This means that routing information to be registered is a wireless LAN.

② **Destination** .....

According to a selected path (local/ethernet/wireless), specify the IP address of the target party.

③ **Subnet mask** .....

According to a selected path (local/ethernet/wireless), specify the net mask to the IP address of the target party.

④ **Gateway** .....

Enter a gateway of packet transfer destination (router or access point) to be routed.

⑤ **Metric** .....

Specify the number of routers and access points (or gateways) on the route through which a packet is sent to the other party. Enter a value in a range between 0 and 15. It is presumed that transmission capacity of a line with a smaller value is high.

## 5 SETTING SCREEN

### 5-5 [Administration] Screen

#### ■ Manager ID

Setting for restriction of access to the setting screen of SB-110.

| Manager ID                    |                        |
|-------------------------------|------------------------|
| Manager ID                    | ① <input type="text"/> |
| Manager Password              | ② <input type="text"/> |
| Password Confirmation Reentry | ③ <input type="text"/> |

#### ① Manager ID .....

If you restrict the access to the setting screen of SB-110, enter a name of manager within 31 alphanumeric characters. Please note that the name is case-sensitive.

When the Manager ID has been specified, you are prompted to enter a user name from the next access. Then, enter the Manager ID.

#### ② Manager Password

If you enter a password for the Manager ID, the password must be within 31 alphanumeric characters and case-sensitive. The entered characters are all expressed as a asterisk (e.g., \*\*\*\*).

When the Manager Password has been specified, you are prompted to enter such password from the next access. Then, enter the Manager Password.

#### ③ Password Confirmation Reentry .....

To prevent an error in entering the password, enter the password again. The entered characters are all expressed as a asterisk (e.g., \*\*\*\*).

---

**SETTING SCREEN 5**

5-5 [Administration] Screen (continued from the previous page)

**■ SYSLOG****Perform the setting to output log information, etc. to a specified host address.**

| SYSLOG       |   |
|--------------|---|
| Use DEBUG    | ① <input type="radio"/> No <input checked="" type="radio"/> Yes |
| Use INFO     | ② <input type="radio"/> No <input checked="" type="radio"/> Yes |
| Use NOTICE   | ③ <input checked="" type="radio"/> No <input type="radio"/> Yes |
| Host Address | ④ <input type="text"/>  |
| Facility     | ⑤ <input type="text"/>  |

- ① **Use DEBUG** ..... Specify whether debug information is output to SYSLOG or not (default setting: Yes).
- ② **Use INFO** ..... Specify whether a message of INFO type is output to SYSLOG or not (default setting: Yes).
- ③ **Use NOTICE** ..... Specify whether a message of NOTICE type is output to SYSLOG or not (default setting: No).
- ④ **Host Address** ..... If the SYSLOG function is used, enter an address of a host which receives SYSLOG. The host must be able to support the SYSLOG server function.
- ⑤ **Facility** ..... Enter a numerical value in a range between 0 and 23 as a facility of SYSLOG. Usually, enter "1" (default setting: 1).

## 5 SETTING SCREEN

5-5 [Administration] Screen (continued from the previous page)

### ■ Use utility (Firmware Update Mode)

Use when you return SB-110 to the default state or update the firmware with the utility which comes with SB-110.

|                                   |                                    |
|-----------------------------------|------------------------------------|
| <b>Use utility.</b>               |                                    |
| <Notice>                          | It will stop the normal operation. |
| <input type="button" value="Go"/> | <input type="checkbox"/> Check     |

Check the [Check] check box and click [GO] to enter the [Use utility] mode and start an operation. This operation can be executed also by using the [MODE] button of SB-110. For the detailed operation, refer to "OPERATION" (Chapter 6).

**MAINTENANCE****CHAPTER 6**

This chapter describes the procedure to restrict the connection to the setting screen of SB-110, to save or initialize the details and update the firmware. Read this chapter as necessary.

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## 6 MAINTENANCE

### 6-1 CD-ROM of SB-110

The CD-ROM which comes with SB-110 can be used in any PC/AT compatible machine. This CD-ROM contains the instruction manual (of PDF format) and Utility.

#### ■ Contents

- Instruction Manual of PDF Format (this document)  
Describes SB-110 in detail.
- Acrobat Reader 5.0 (for Windows)  
Software to view the PDF files contained the CD-ROM. (Install according to the instruction screen of the installer.)
- SB-110 Utility (for Windows)  
Use to initialize (☞ see 6-6) the entire configuration of SB-110 or update (☞ see 6-6) it.

#### ■ Auto Run Function

When you insert the CD-ROM into a CD-ROM drive of your PC/AT compatible machine, a menu screen is shown automatically.

#### ■ Available OS

Utility contained in the CD-ROM of SB-110 can be used in the following operating systems:

Windows 98, Windows 98SE, Windows 2000 and Windows Me.

#### ■ To Start Utility

Utility is contained in the CD-ROM which comes with SB-110.

1. Insert the CD-ROM, which comes with SB-110, into a CD-ROM drive of your PC.
  - The Auto Run function of the CD-ROM of SB-110 starts and a menu screen is displayed automatically.
2. Click [SB-110 Utility].
  - SB-110 Utility starts.



#### [When Auto Run function does not start]

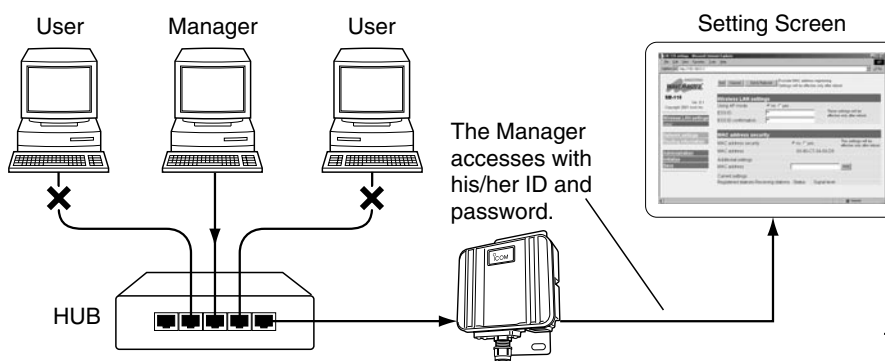
Double-click the AutoRun.exe in the [CD-ROM Drive] icon through the Explorer, and the menu screen above is displayed.

## MAINTENANCE 6

### 6-2 Restricting Access to Setting Screen

When you specify the Manager ID and Manager Password, you can prevent any unauthorized person from changing the setting screen of SB-110 through a WWW browser.

If the Manager ID and Manager Password are specified, a screen to prompt an operator to enter the user name [User Name (U)] and password [Password (P)] when he/she accesses.



#### <How to set>

The Manager enters a maximum of 31 half size alphanumeric characters which are case-sensitive.

1. Start a WWW browser and access the SB-110 setting screen (☞ see 4-2).
  - The [Wireless LAN Settings] screen is shown.
2. Click [Administration] in the left frame.
  - The [Administration] screen is shown.
3. Enter the manager ID in the [Manager ID] field (e.g., "user").
4. Enter the manager password in the [Manager Password] and [Password Confirmation Reentry] fields (e.g., userpass).

The entered characters are all expressed as a asterisk (e.g., \*\*\*\*\*).

5. Click [Set], and a screen is shown to prompt you to enter the user name [User Name (U)] and password [Password (P)].

Then, enter the specified manager ID and manager password.



## 6 MAINTENANCE

### 6-3 Checking or Saving Settings

You can check the details specified in every setting screen of SB-110 and can save them in a file of hypertext (HTML) format.

You can use the saved settings when the settings have been lost by accident.

#### <How to check and save>

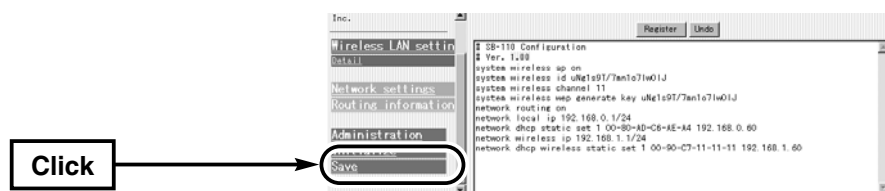
1. Start a WWW browser and access the SB-110 setting screen (see 4-2).

- The [Wireless LAN Settings] screen is shown.

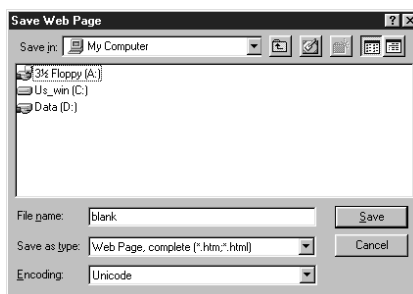
2. Click [Save] in the left frame.

- The details of settings are listed in the [Save] screen.

\* Do not delete nor rewrite any description in the text box.



3. When the [Save] screen is shown, click [Save As (A)] in the [File (E)] menu of the WWW browser.



4. Select the location from [Save in (I)] and enter a file name in the [File Name (N)] box.

\* If you use Netscape Navigator, specify ".htm" or ".html" as the file extension.

5. Select "Web Page, complete (\*.htm;\*.html)" from [File Types(T)]. (Internet Explorer)

6. Click [Save (S)], and the configuration file is saved in the specified location.

#### Password displayed in [Save] screen

The details of the manager password and key generator (character strings from which a encryption key is generated) displayed in the [Save] screen are encrypted. So, the password in the saved configuration file is never revealed.



## MAINTENANCE 6

### 6-4 Writing Saved Settings

This section describes the procedure to write the details of a saved configuration file (see 6-3) into the SB-110 setting screen.

#### <How to write>

1. Move a cursor from a PC connected to SB-110 to a saved configuration file with the extension ".htm" and double-click it.
  - The [Save] screen is shown.

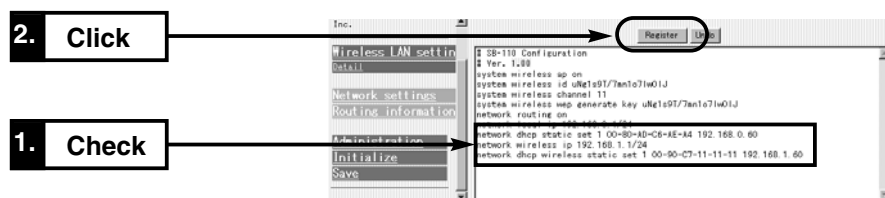


SB-110setting page.htm

2. Check the IP address of SB-110 in the text box.

If the displayed IP address is different from the set SB-110 IP address, change the SB-110 IP address in the configuration file according to the SB-110 IP address set currently. Do not change any other items.

3. Click [Register].



4. When you click [Register], the details of the configuration file are written into SB-110.

\* If you set anything after you write the details of the configuration file, close the screen once. Otherwise, an error may occur. Be sure to start the WWW browser again when you access the setting screen.

#### [△ Remarks]

Do not write any configuration file created by SB-110 into any products of the same type nor any products other than SB-110.

## 6 MAINTENANCE

### 6-5 Returning Setting to Default State

When you want renew the setting to change the network configuration or you want to delete all the existing setting data, you can return the entire setting to the default state (initialize) in the three ways below:

- A Use the [MODE] button.
- B Use the setting screen (☞ see page 72).
- C Use Utility (☞ see page 73).

\* To return the setting to the default state with Utility, you need to start Utility in the CD-ROM which comes with SB-110. For how to start it, refer to "To Start Utility" in the "CD-ROM of SB-110" (☞ see 6-1).

#### A Use the [MODE] button.

When the initialization is executed in this way, all the setting items are returned to the default state. If the IP address set in SB-110 is unknown or the SB-110 setting screen cannot be shown, you can perform the initialization according to the procedure below:

##### <How to initialize>

1. Remove the power supply from SB-110.
2. Remove all the network devices from SB-110.
3. Connect an AC adapter to SB-110 holding down the [MODE] button and turn on the power supply.
4. Release the [MODE] button when the [PWR] indicator and [MODE] indicator, which were blinking (in green) alternately, has started blinking (in green) simultaneously.
  - Enter the [INITIALIZATION] mode and start an operation.
5. Connect a PC to SB-110 through cable (☞ see 4-1) and start the operating system.
6. Start a WWW browser and specify the default IP address (192.168.0.1) of SB-110.

#### [INITIALIZATION] mode

When the [INITIALIZATION] mode is enabled by operating the [MODE] button, the IP address and ESS ID of SB-110 are replaced with the default state temporarily until the initialization (the procedure after the step 7 above) has been completed actually. If you turn on the power supply of SB-110 without performing the procedure after the step 7, the setting is returned to the default state.

---

## MAINTENANCE 6

### 6-5 Returning Setting to Default State

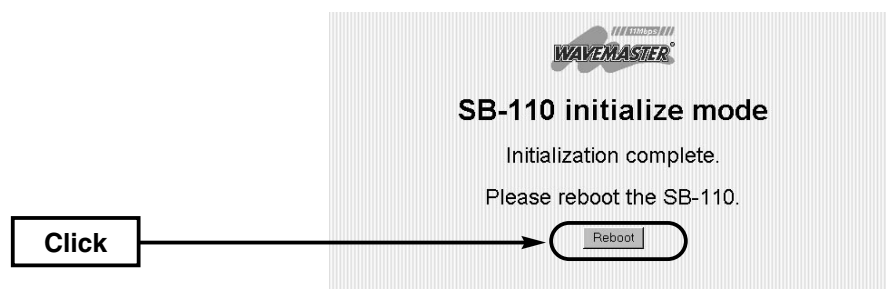
⑧ Use the [MODE] button.

<How to initialize> (continued from the previous page)

7. When the [INITIALIZATION] mode screen is shown, click [Initialize].



8. Click [Reboot].



9. When the indicators of SB-110 have been returned to the state before the [INITIALIZATION] mode is enabled and when the [Wireless LAN Settings] screen has been shown, the initialization ends.

- During rebooting, the screen below is shown.



## 6 MAINTENANCE

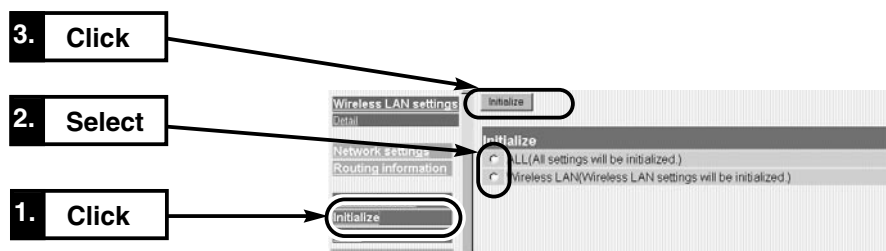
### 6-5 Returning Setting to Default State (continued from the previous page)

#### **B Use the setting screen**

If you know the IP address set in SB-110 and you can access the setting screen with such IP address, you can initialize all the settings or a certain part of the settings (e.g., the wireless section) through the SB-110 setting screen.

#### <How to initialize>

1. Start a WWW browser and access the SB-110 setting screen (☞ see 4-2).
  - The [Wireless LAN Settings] screen is shown.
2. Click [Initialize] in the left frame.
  - The [Initialize] screen is shown.
3. Click a radio button of desired condition.
4. Click [Initialize].
  - Return the setting equivalent to the selected condition to the default state and enter the [Wireless LAN Settings] screen.



#### ■ Type of Initialization

- |                           |   |
|---------------------------|---|
| <b>ALL</b> .....          | All the settings specified in SB-110 are returned to the default state.   |
| <b>Wireless LAN</b> ..... | The items in the [Wireless LAN Settings] screen and [Detail Settings] screen are returned to the default state. |

## MAINTENANCE 6

### 6-5 Returning Setting to Default State (continued from the previous page)

#### ③ Use Utility

Utility is contained in the CD-ROM of SB-110. This section describes the procedure to initialize the settings with Utility.

#### ◆ Before using Utility ◆

To return the SB-110 settings to the default state with Utility, enter the [Use utility] mode. Otherwise, you cannot use Utility to initialize the settings. You need to access SB-110 and assign the IP address to your PC in advance.

#### <How to enter [Use utility] mode>

This section describes the procedure to enter the [Use utility] mode using the [MODE] button. You may also enter the [Use utility] mode through the [Administration] screen (see 5-5).

1. Remove the power supply from SB-110.
2. Remove all the network devices from SB-110.
3. Connect an AC adapter to SB-110 holding down the [MODE] button and turn on the power supply.
4. Release the [MODE] button before the [PWR] indicator and [MODE] indicator, which were blinking (in green) alternately, start blinking (in green) simultaneously.
  - Enter the [Use utility] mode and start an operation.

#### <How to initialize>

1. Check that SB-110 is operating in the [Use utility] mode. Then, connect a PC to SB-110 through cable or by wireless and start the operating system.
2. Start [SB-110 Utility].

For how to start it, refer to "To Start Utility" in the "CD-ROM of SB-110" (see 6-1).

  - The operation screen of Utility is shown. (Refer to the screen at the next page.)
3. Click the [User Data Initialization] radio button.

Enter the IP address of SB-110 in the [SB-110 IP address] text box and click [Start].
4. When the message "User data initialization has been completed." has been displayed on the [SB-110 Utility] screen, the initialization of SB-110 ends.

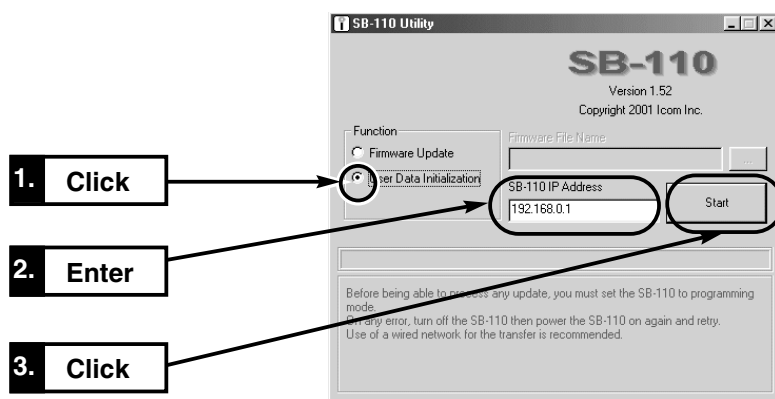
#### [Use utility] mode

When the [Use utility] mode is enabled by operating the [MODE] button, the wireless LAN security setting (WEP function) of SB-110 is disabled temporarily until Utility operation has been completed actually. If Utility is used in a wireless terminal, disable the WEP function of a PC.

## 6 MAINTENANCE

### 6-5 Returning Setting to Default State (continued from the previous page)

<How to initialize> (An operation of the step 3)



#### [△ Remarks]

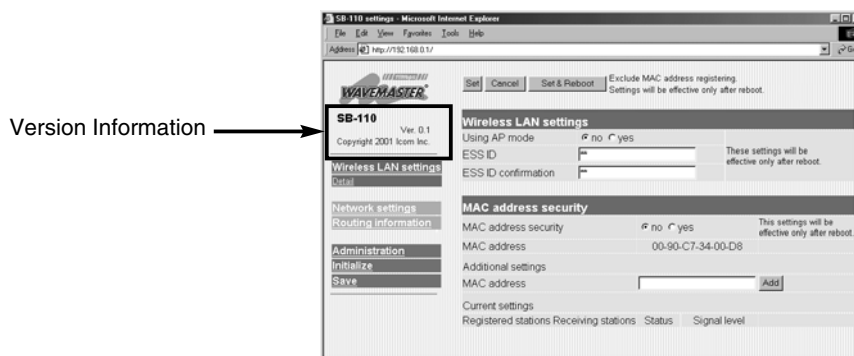
Do not quit Utility nor turn off SB-110 during the execution of Utility. Otherwise, data may be lost or an error may occur in an operation. Wait until "... has been completed." is shown.

### 6-6 Upgrading SB-110

Use Utility contained in the CD-ROM of SB-110. This section describes the procedure to upgrade SB-110 (firmware) with Utility.

#### ■ Firmware

The firmware is a program written into flash memory of SB-110 by default. This program may be upgraded to extend the function or improve the performance. Before upgrading it, access the SB-110 setting screen and check the version information displayed in the frame as shown below. A function can be added and SB-110 can be kept in the best condition.



## MAINTENANCE 6

### 6-6 Upgrading SB-110

#### ■ Firmware (continued from the previous page)

#### ◆ Before using Utility ◆

To upgrading the firmware with Utility, enter the [Use utility] mode. Otherwise, you cannot use Utility to update the firmware. You need to access SB-110 and assign the IP address to your PC in advance.

#### <How to enter [Use utility] mode>

This section describes the procedure to enter the [Use utility] mode using the [MODE] button. You may also enter the [Use utility] mode through the [Administration] screen (☞ see 5-5).

1. Remove the power supply from SB-110.
2. Remove all the network devices from SB-110.
3. Connect an AC adapter to SB-110 holding down the [MODE] button and turn on the power supply.
4. Release the [MODE] button before the [PWR] indicator and [MODE] indicator, which were blinking (in green) alternately, start blinking (in green) simultaneously.
  - Enter the [Use utility] mode and start an operation.

#### ◆ Notes on Updating ◆

To prevent an error in firmware transfer, connect one PC, in which Utility is installed, to one SB-110 through cable or by wireless. It is advisable to connect the PC and SB-110 through a hub on Ethernet LAN (☞ see 4-1).

- If you connect the PC and SB-110 by wireless, follow the instructions below.

Enable the Access Point mode (☞ see 4-3).

Disable the wireless LAN security (WEP function) of the PC.

Remove the SB-110's Ethernet cable from the PC.

Keep the wireless communication distance to SB-110 1 m or less.

#### [Use utility] mode

When the [Use utility] mode is enabled by operating the [MODE] button, the wireless LAN security setting (WEP function) of SB-110 is disabled temporarily until Utility operation has been completed actually. If Utility is used in a wireless terminal, disable the WEP function of a PC.

**You are responsible for the result of operation described herein. So, please follow the instructions below when you start an operation.**

◎The CD-ROM (excluding Acrobat Reader) which comes with SB-110 is for SB-110 only. Do not use it for any other devices.

◎Icom Inc. is not responsible for any interference arisen by incorporating a configuration file for SB-110 or a firmware update data file, which is available in our home page, into any device other than SB-110. Moreover, Icom Inc. is not responsible for any interference arisen by modifying or disassembling SB-110. Furthermore, Icom Inc. is not responsible for any damages, lost profits or third party's claim resulting from any missed communication or telephone call due to SB-110's fault, error, malfunction, breakage, data loss or any other external factor such as power failure.

## 6 MAINTENANCE

### 6-6 Upgrading SB-110 (continued from the previous page)

#### ■ How to Update

1. Check that SB-110 is operating in the [Use utility] mode. Then, connect a PC to SB-110 through cable or by wireless and start the operating system.

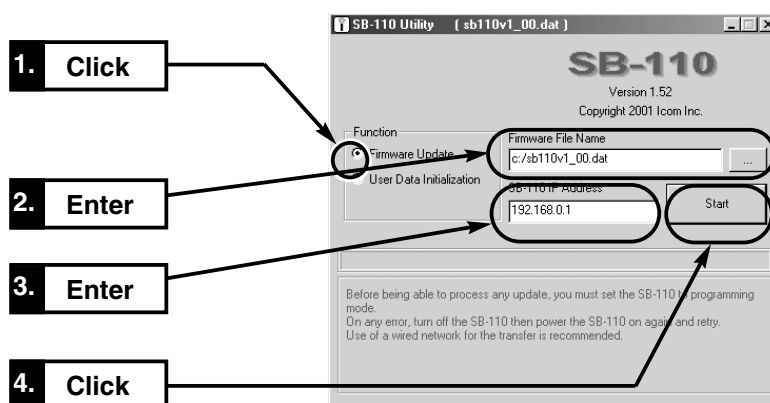
2. Start [SB-110 Utility].

For how to start it, refer to "To Start Utility" in the "CD-ROM of SB-110" (☞ see 6-1).

● The operation screen of Utility is shown. (Refer to the screen.)

3. Click the [Firmware Update] radio button.

Enter a link to a downloaded new configuration file (extension: dat) of SB-110 in the [Firmware File Name] text box directly or click [...] to select the file. Then, enter the IP address of SB-110 in the [SB-110 IP Address] text box and click [Start]. (Refer to the screen.)



4. When the message "Firmware update has been completed." has been displayed on the [SB-110 Utility] screen, the initialization of SB-110 ends.

#### [Time required for update]

Time elapsed to reboot the system since the firmware data file was transferred to SB-110 from a wired or wireless terminal is as follows:

- Transfer: 30 to 60 seconds
- Reboot: 30 seconds



---

## MAINTENANCE 6

### 6-7 When the unit fails

Warranty conditions may differ depending on your dealer.

Please ask your dealer when you purchase the SB-110 about the Warranty and its conditions.

#### **Basic conditions are as follows:**

##### **Warranty**

At the time of purchase, the retailer will provide a warranty sheet complete with the details of the purchase (date of purchase, name of local dealer, etc.). Make sure the information is correct and keep the warranty in a safe place for future use.

##### **Requesting servicing**

Refer to the instruction manual and check the settings of both the computer and the SB-110 unit. If you cannot solve the problem yourself, request servicing according to the following terms:

##### **While the Warranty is valid.**

Contact the local dealer where you purchased the product.

The retailer will service the product in accordance with the warranty. Have your warranty ready at the time of request.

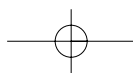
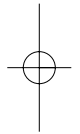
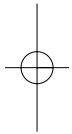
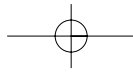
##### **After the Warranty period has expired.**

Contact the local dealer where you purchased the product.

If the product is serviceable, the retailer will repair the product for a fee.

##### **Questions Regarding Service**

If you have any questions regarding service, contact the local dealer where you purchased the product, or contact the service staff at one of our sales offices.



## FOR YOUR REFERENCE

## CHAPTER 7

This chapter describes the examples of routing setting, setting screen overview, initial value of setting item and rating.

---

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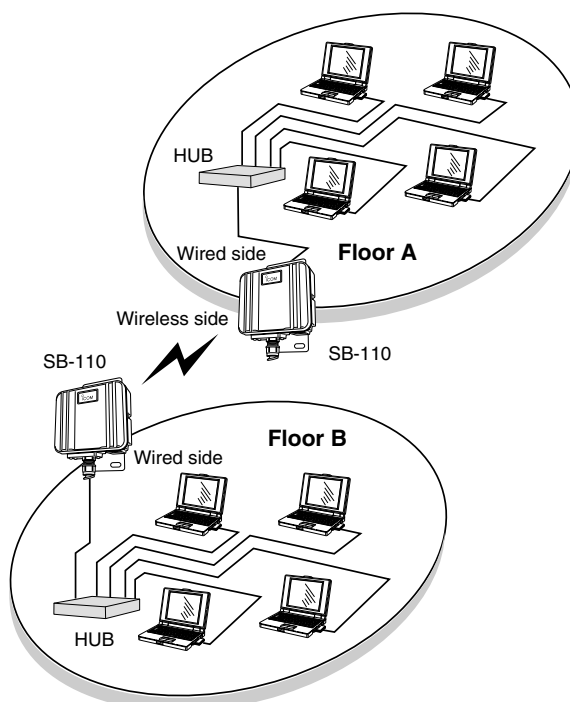
## 7 FOR YOUR REFERENCE

### 7-1 Examples of Routing Setting

This section describes two examples of settings in a network. One is for the RIP function and another one is for the routing table.

#### [Setting conditions of floor A]

- IP address of SB-110  
[Wired side]  
192.168.0.1.  
[Wireless side]  
192.168.1.1.
- IP address of wired terminal  
192.168.0.10 to  
192.168.0.13  
(4 addresses)



#### [Setting conditions of floor B]

- IP address of SB-110  
[Wired side]  
192.168.2.1.  
[Wireless side]  
192.168.1.2.
- IP address of wired terminal  
192.168.2.10 to  
192.168.2.13  
(4 addresses)

### ■ Setting RIP Function

#### [SB-110: Floor A side]

\* Specify the IP address at the wired side of SB-110 as a default gateway in a wired terminal.

#### [IP address] Screen (see 5-3)

|   |  |           |              |             |             |             |             |               |               |
|---|--|-----------|--------------|-------------|-------------|-------------|-------------|---------------|---------------|
| <b>Routing function</b>                                     |  |           |              |             |             |             |             |               |               |
| Routing function  | <input type="radio"/> No <input checked="" type="radio"/> Yes  |           |              |             |             |             |             |               |               |
| <b>IP address</b>   |  |           |              |             |             |             |             |               |               |
| IP address  | <table border="1"> <tr> <td>Wired LAN</td> <td>Wireless LAN</td> </tr> <tr> <td>192.168.0.1</td> <td>192.168.1.1</td> </tr> <tr> <td>Subnet mask</td> <td>Subnet mask</td> </tr> <tr> <td>255.255.255.0</td> <td>255.255.255.0</td> </tr> </table> | Wired LAN | Wireless LAN | 192.168.0.1 | 192.168.1.1 | Subnet mask | Subnet mask | 255.255.255.0 | 255.255.255.0 |
| Wired LAN   | Wireless LAN   |           |              |             |             |             |             |               |               |
| 192.168.0.1   | 192.168.1.1  |           |              |             |             |             |             |               |               |
| Subnet mask   | Subnet mask  |           |              |             |             |             |             |               |               |
| 255.255.255.0   | 255.255.255.0  |           |              |             |             |             |             |               |               |
| Wireless side settings work only with the routing function. |  |           |              |             |             |             |             |               |               |

#### [Routing Function] Screen (see 5-4)

|            |   |
|------------|---|
| <b>RIP</b> |   |
| Use RIP    | <input type="radio"/> No <input checked="" type="radio"/> Yes |

## FOR YOUR REFERENCE 7

### 7-1 Examples of Routing Setting

#### ■ Setting RIP Function (continued from the previous page)

##### [SB-110: Floor B side]

\* Specify the IP address at the wired side of SB-110 as a default gateway in a wired terminal.

##### [IP address] Screen (see see 5-3)

| Routing function |  |           |              |            |             |             |               |
|------------------|--|-----------|--------------|------------|-------------|-------------|---------------|
| Routing function | <input checked="" type="radio"/> Yes   |           |              |            |             |             |               |
| IP address       |  |           |              |            |             |             |               |
|                  | <table border="1"> <thead> <tr> <th>Wired LAN</th> <th>Wireless LAN</th> </tr> </thead> <tbody> <tr> <td>IP address</td> <td>192.168.2.1</td> </tr> <tr> <td>Subnet mask</td> <td>255.255.255.0</td> </tr> </tbody> </table> | Wired LAN | Wireless LAN | IP address | 192.168.2.1 | Subnet mask | 255.255.255.0 |
| Wired LAN        | Wireless LAN   |           |              |            |             |             |               |
| IP address       | 192.168.2.1  |           |              |            |             |             |               |
| Subnet mask      | 255.255.255.0  |           |              |            |             |             |               |

Wireless side settings work only with the routing function.

##### [Routing Function] Screen (see see 5-4)

| RIP     |                                      |
|---------|--------------------------------------|
| Use RIP | <input checked="" type="radio"/> Yes |

#### ■ Setting Routing Table

##### [SB-110: Floor A side]

Communication can be made similarly also by checking the [NO] radio button of [Routing function] when you create the routing table.

##### [IP address] Screen (see see 5-3)

| Routing function |                                      |
|------------------|--------------------------------------|
| Routing function | <input checked="" type="radio"/> Yes |

##### [Routing Function] Screen (see see 5-4)

| RIP     |                                     |
|---------|-------------------------------------|
| Use RIP | <input checked="" type="radio"/> No |

| Static Route        |             |               |             |        |        |
|---------------------|-------------|---------------|-------------|--------|--------|
| Additional settings |             |               |             |        |        |
| Path                | Destination | Net Mask      | Gateway     | Metric |        |
| ethernet            |             |               |             |        | Add    |
| Current settings    |             |               |             |        |        |
| Path                | Destination | Net Mask      | Gateway     | Metric |        |
| wireless            | 192.168.2.0 | 255.255.255.0 | 192.168.1.2 | 1      | Delete |

7

##### [SB-110: Floor B side]

Refer to the next page.

## 7 FOR YOUR REFERENCE

### 7-1 Examples of Routing Setting

#### ■ Setting Routing Table (continued from the previous page)

[SB-110: Floor B side]

[IP address] Screen (☞ see 5-3)

| Routing function |   |
|------------------|---|
| Routing function | <input type="radio"/> No <input checked="" type="radio"/> Yes |

[Routing Function] Screen (☞ see 5-4)

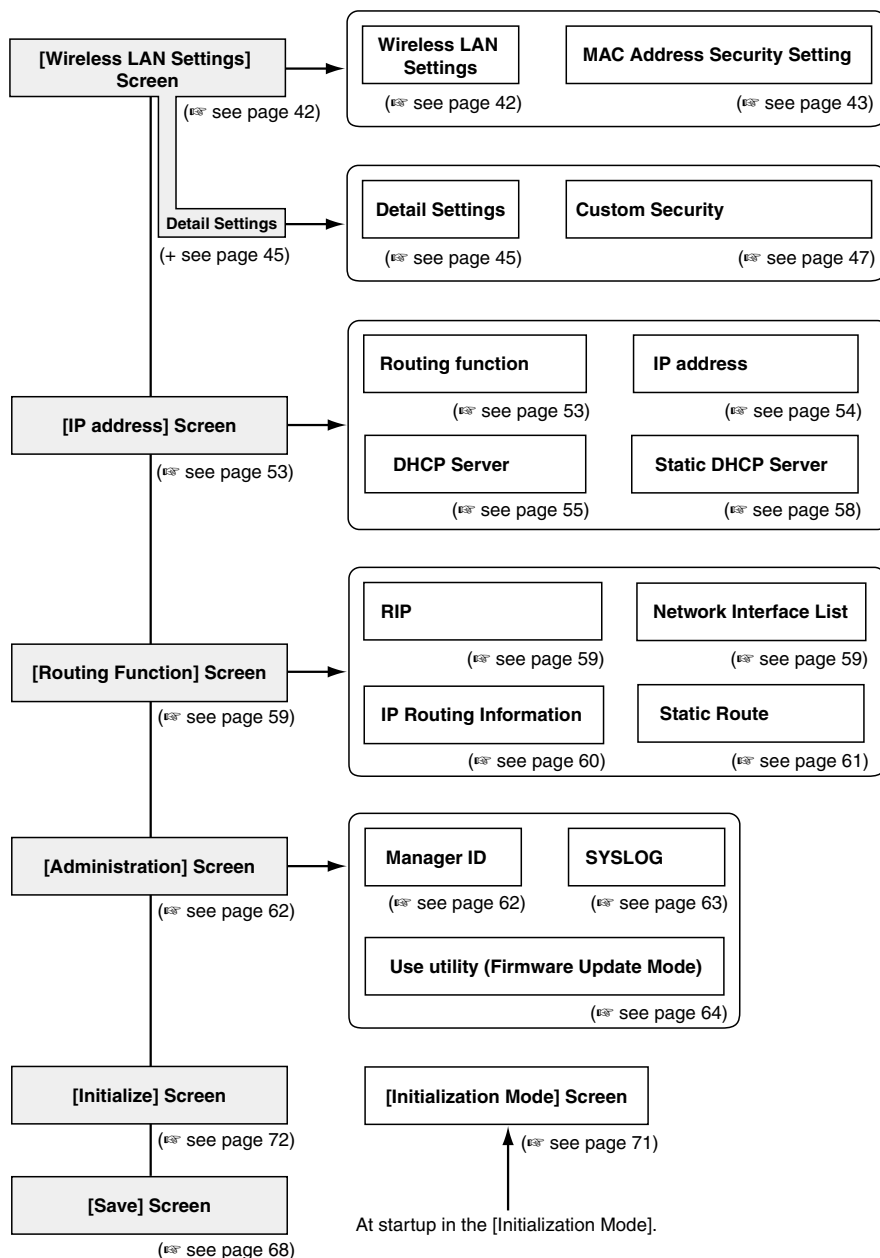
| RIP     |   |
|---------|---|
| Use RIP | <input checked="" type="radio"/> No <input type="radio"/> Yes |

| Static Route        |             |               |             |        |        |
|---------------------|-------------|---------------|-------------|--------|--------|
| Additional settings |             |               |             |        |        |
| Path                | Destination | Net Mask      | Gateway     | Metric |        |
| ethernet            |             |               |             |        | Add    |
| Current settings    |             |               |             |        |        |
| Path                | Destination | Net Mask      | Gateway     | Metric |        |
| wireless            | 192.168.0.0 | 255.255.255.0 | 192.168.1.1 | 1      | Delete |

## FOR YOUR REFERENCE 7

### 7-2 Setting Screen Overview

The overview of SB-110 setting screen displayed on a WWW browser is shown below.



## 7 FOR YOUR REFERENCE

### 7-3 List of Initial Values of Setting Items

The section lists the initial values in the WWW browser setting screen of SB-110.

#### [Wireless LAN Settings] Screen

##### Wireless LAN Settings

- ESS ID: \*\* LG
- Confirmation reentry of ESS ID: \*\* LG

##### MAC Address Security Setting

- MAC address security: no

#### [Detail Settings] Screen

##### Detail Settings

- Channel: 11
- Transmit Rate: Automatic
- Rts/Cts Threshold: None
- Security Level: None

##### Custom Security

- WEP Key - Selection: 1
- WEP Key - Character string: 00-00-00-00-00

#### [IP address] Screen

##### Routing function

- Routing function: No

##### IP address

##### Wired LAN

- IP address: 192.168.0.1
- Subnet mask: 255.255.255.0

##### Wireless LAN

- IP address: 192.168.1.1.
- Subnet mask: 255.255.255.0

##### DHPC Server

- Use DHPC Server: Yes
- Lease Period: 3

##### Wired LAN

- Initial Allocation IP Address: 192.168.0.10
- Subnet mask: 255.255.255.0
- Number of Allocations: 30

##### Wireless LAN

- Initial Allocation IP Address: 192.168.1.10
- Subnet mask: 255.255.255.0
- Number of Allocations: 30

#### [Routing Function] Screen

##### RIP

- Use RIP: Yes

#### [Administration] Screen

##### SYSLOG

- Use DEBUG: Yes
- Use INFO: Yes
- Use NOTICE: No
- Facility: 1

### 7-4 List of Functions

#### ■ Wireless LAN Functions

- Building Communication (Bridge) mode
- Access Point mode
- Roaming function
- MAC address security
- WEP (Wired Equivalent Privacy)
- ESS ID (Extended Service Set Identifier)

#### ■ Others

- WWW maintenance
- Firmware update

#### ■ Router Functions

- Routing protocol TCP/IP (RIP static)
- Static routing
- RIP function
- DHCP server function
- DHCP static function
- SYSLOG



---

**FOR YOUR REFERENCE 7****7-5 Rating****■ General Specifications**

- **Input voltage:** DC 12 V (DC 12 V  $\pm$ 5%)  
The input voltage of the AC adapter (which comes with SB-110) is AC 120 V  $\pm$ 5%.
- **Consumption current:** 400 mA (typically)
- **Grounding method:** Minus earth
- **Installation environment:** Temperature 0 to +45° C
- **Outside dimension:** 140.0 (W) x 120.0 (H) x 50.0 (D) mm (excluding any protrusion)
- **Weight:** Approximately 960 g (including cables)


**■ Wireless Section**

- **International standard:** IEEE802.11/IEEE802.11b
- **Approval standard:** FCC Part 15, Sub Part B, Class A, Part 15.247
- **Communication method:** Simplex system
- **Radio wave method:** Direct spread-spectrum communication system
- **Modulation method:** DPSK, DQPSK, (Burger/CCK code)
- **Usable frequency range:** 2400 to 2472 MHz
- **Number of channels:** 1 to 11
- **Communication distance:** Approximately 800 m (not to be blocked by any obstruction)  
<Building Communication mode>  
Approximately 70 m (not to be blocked by any obstruction)  
<Access Point mode>
- **Security:** WEP (Wired Equivalent Privacy), ESS ID (Extended Service Set Identifier) and MAC (Media Access Control Address)
- **Transmission output:** 1W or less
- **Receiver sensitivity:** -76 dBm or less (Frame error rate = 8%)
- **Demodulation method:** Digital demodulation (Matched filter system)

## 7 FOR YOUR REFERENCE

7-5 Rating (continued from the previous page)

### ■ Wired Section

- **LAN interface:** Ethernet plug (Type RJ-45)  
\* Based on IEEE802.3/10BASE-T  
\* Based on IEEE802.3u/100BASE-TX
- **Transmission rate:** 10/100 Mbps (switched automatically/half-duplex)
- **Routing method:** Static/Dynamic (RIP)
- **User interface:** Status indicator (PWR <Green>, MODE <Green>, LAN <Red>,  <Red>), [MODE] button.

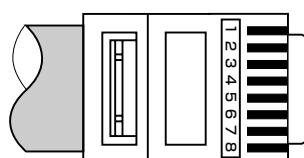
### ■ Antenna Section (for built-in type)

- **Antenna type:** Pattern antenna
- **Antenna gain:** 5.5 dBi
- **Directional Characteristics of Antenna:**  
Horizontal:  $\pm 30^\circ$  (attenuation 3 dB)  
Vertical:  $\pm 30^\circ$  (attenuation 3 dB)
- **Impedance:**  $50\Omega$
- **Standing wave ratio:** 1.6 or less

\* The rating, specifications, appearance, etc are all subject to change without notice.

\* The transmission distance varies depending on the communication speed and environment.

### 7-6 Specifications for Ethernet Plug



Modular plug type RJ-45

- |                  |                  |
|------------------|------------------|
| 1. Sending (+)   | 2. Sending (-)   |
| 3. Receiving (+) | 4. Not used      |
| 5. Not used      | 6. Receiving (-) |
| 7. Not used      | 8. Not used      |

---

## FOR YOUR REFERENCE 7

### 7-7 Glossary

#### Access Point

A generic name of devices or points to connect a wired LAN and wireless LAN.

#### Authentication

To check whether a user who is accessing a network through an internet has the right to access and verify whether his/her password and ID are valid.

#### Bridge

A generic name of network devices which relay packets at a MAC address level.

#### Broadcast

To send several packets to all the devices in the same network at a time.

#### Browser

An application to obtain an HTML document from a WWW server and to view it. This instruction manual assume that Internet Explorer, a typical browser, is used.

#### Client

A generic name of terminals or applications which request a server to send information and receive the reply in a network.

#### DHCP server

DHCP (Dynamic Host Configuration Protocol) is a protocol for a client to obtain necessary information automatically from a server on the TCP/IP network. The DHCP server controls IP address, default gateway, domain name, etc. as network information. SB-110, which has the DHCP server function, assigned the IP address, default gateway, DNS address, etc. when the DHCP client (PC) has started.

#### DNS (Domain Name System)

A name resolution service in the TCP/IP network. According to DNS, computer names and domain names are registered in the domain name server and the domain name service is offered. By using the domain name service, a user can specify a target site with an easy-to-understand domain name or host name instead of an IP address which consists of numerical character string only.

#### Domain Name

The IP address is not easy to understand because it consists of numerical character string only. So, a domain name is used. The domain name shows a group to which the IP address belongs. For example, the domain name of an e-mail address "icom@bbb.co.jp" is "bbb.co.jp".

#### ESS-ID (Extended Service Set-Identifier)

A name for identification to create several network groups in a communication area in a wireless LAN. In the wireless network group which communicates to SB-110, the identifier of wireless terminal must be the same as that of SB-110.

#### ETHERNET

A LAN communication system developed by Xerox, DEC and Intel. 10BASE-T, 100BASE-TX, 10BASE-5, 10BASE-2, etc. are available depending on the cable type.

#### Flash Memory

Writable memory of SB-110. Information stored in the flash memory is not erased even when the power supply turns off.

#### Global IP Address

A unique address assigned to a device. One global IP address is assigned to only one device in the world.

## 7 FOR YOUR REFERENCE

### 7-7 Glossary (continued from the previous page)

#### **HTML (Hyper Text Markup Language)**

A language to describe a document in a WWW server. Tags are embedded in the HTML document. HTML is used to describe WWW pages.

#### **HTTP (Hyper Text Transfer Protocol)**

A protocol used to transfer HTML file. When URL is entered in a WWW browser, the HTML document is transferred from a WWW server to the WWW browser of a PC with HTTP. The transferred document is interpreted by the WWW browser and displayed on the screen.

#### **Hub**

A devices required when a network is configured using SB-110. Connect SB-110 to the hub through 10BASE-T or 100BASE-TX cable. For the communication in 100 Mbps, the twisted pair cable of Category 5 must be used and, moreover, the hub also must support 100BASE-TX.

#### **Internet Explorer**

A browsing software which comes with Windows or Mac OS.

#### **IP**

A protocol used in the internet. The IP is positioned at the center of the structure of internet, some protocols aiming at application are located above the IP and some protocols for communication line are laminated under the IP.

#### **IP (Internet Protocol) Address**

32-Bit address to identify all the devices connected to a network in which the TCP/IP protocol is used. Usually, the IP address consists of four 8-bit numerical character strings of decimal notation (e.g., 192.168.0.1). A private IP address is specified by a network administrator. In this case, the network administrator does not need to apply to an address administration agency nor internet service provider. However, the network administrator must assign the private address according to the rules below. The private address must be converted into a global IP address when connecting to an external network. The IP addresses below can be used as the private IP address.

Class A: 10.0.0.0 to 10.255.255.255

Class B: 172.160.0.0 to 172.31.255.255

Class C: 192.168.0.0 to 192.168.255.255

#### **LAN (Local Area Network)**

A relatively small-sized network in the same floor or the same site.

#### **MAC Address (Media Access Control Address)**

A physical address specified in individual wired or wireless product. The network device manufacturers control this address so that a unique number can be assigned to only one product in the world. Ethernet equipment and wireless LAN product send and receive a frame according to this MAC address.

#### **Network**

The state that some devices such as server, workstation, PC, etc. are connected to a communication system through cable or ADSL line to transmit data.

---

## FOR YOUR REFERENCE 7

### 7-7 Glossary (continued from the previous page)

**Packet**

A unit to send/receive data. The packet consists of a header, which contains information necessary for sending/receiving, and data section which is data itself.

**Password**

Character string which must be entered by a user who is accessing a network because of network security. If any password is set, the user cannot access unless the user enter the valid password correctly.

**Protocol**

Definition of procedure to executed to send/receive data in the communication.

**RIP (Routing Information Protocol)**

A protocol used in a TCP/IP network that routing information is exchanged between routers. The router sends a packet to a correct party according to this routing information.

**Subnet Mask**

Subnet mask is used to one IP address as a network address and host address. Assuming that the IP address of a host is "192.168.0.1" and the subnet mask is "255.255.255.0", multiply the IP address of binary notation and subnet mask of binary notation together, and the network address "192.168.0.0" is obtained. Then, the remainder "1" is the host address.

**SYSLOG**

A function to output a system message to a network. If this function is supported, log information can be controlled by the SYSLOG server of UNIX etc.

**TCP/IP**

The most popular basic internet protocol supported by Windows 98, Windows 2000 and any other major operating systems. SMTP, FTP, etc uses this protocol. TCP/IP Control Panel is installed in Macintosh equipped with Open Transport.

**Traffic**

Flow of packets on the network or load applied to the network line (e.g., data transmitted through the network line). As the traffic increases, the data transmission rate may decrease or data may be lost.

**URL (Uniform Resource Locator)**

Specify when you access a home page on the network. Our URL is <http://www.icom.co.jp/>.

**WEP (Wired Equivalent Privacy)**

A function to encrypt, send and receive a wireless LAN signal. This function can prevent the wireless LAN communication intercept. SB-110 supports 64/128-bit encryption.

**WWW Browser**

An application to view a WWW page or to use a WWW server for search. Typical browser is "Internet Explorer" and "Netscape Navigator".

**10BASE-T**

One of the Ethernet standards. 10BASE-T achieves the transmission rate of 10 Mbit/s with twisted pair cable. SB-110's Ethernet port supports this standard.

**100BASE-TX**

One of the Ethernet standards. 100BASE-TX achieves the transmission rate of 100 Mbit/s with twisted pair cable of Category 5. SB-110's Ethernet port for LAN supports this standard.

**Count on us!**

