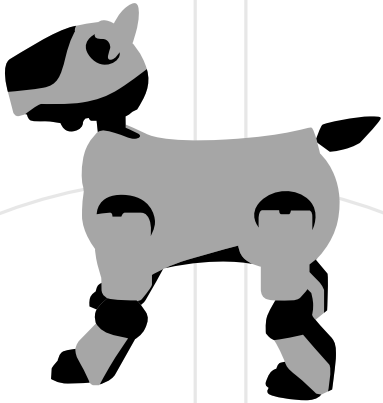
SONY

4-652-247-**11**(1)



AIBO Wireless LAN Card

Operating Instructions

ERA-201D1

© 2000 Sony Corporation

Safety Information

FCC WARNING

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

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

WARNING

- Opening the card, for whatever the reason, could lead to damages that are not covered by the guarantee.
- To prevent fire or shock hazard, do not expose your wireless LAN card to rain or moisture.

Owner's Record

The model number and serial number are located on the card. Record the serial number in the space provided below. Refer to the model and serial number whenever you call upon your Sony dealer.
Model No. ERA-201D1
Serial No. _____

Regulatory information

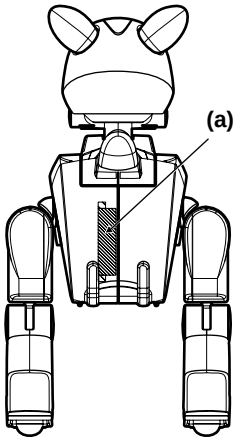
This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be 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:

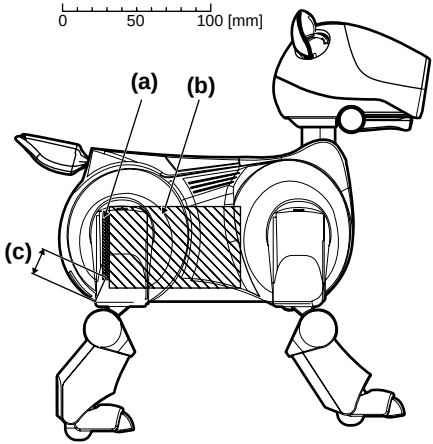
- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

You are cautioned that any changes or modifications not expressly approved in this manual could void your authority to operate this equipment.

Complies with CANADA 210.

When you install the AIBO Wireless LAN Card ERA-201D1 into the Entertainment Robot “AIBO” ERS-210 properly, the LAN card is stored inside AIBO as indicated by the shadow in the illustrations below:





(a) Built-in antenna
(b) LAN card
(c) Distance from the antenna to outside of the cover: 17.8 mm

Customer Support

How can you contact the AIBO Customer Link?
Call: 1-800-427-2988
Email address: aibosupport@info.sel.sony.com

"AIBO," the AIBO logo, "OPEN-R," and the OPEN-R logo are registered trademarks of Sony Corporation.
"Memory Stick," " ," and " MEMORY STICK " are trademarks of Sony Corporation. In this manual, the "™" mark and "®" mark have been omitted.

http://www.aibo.com/

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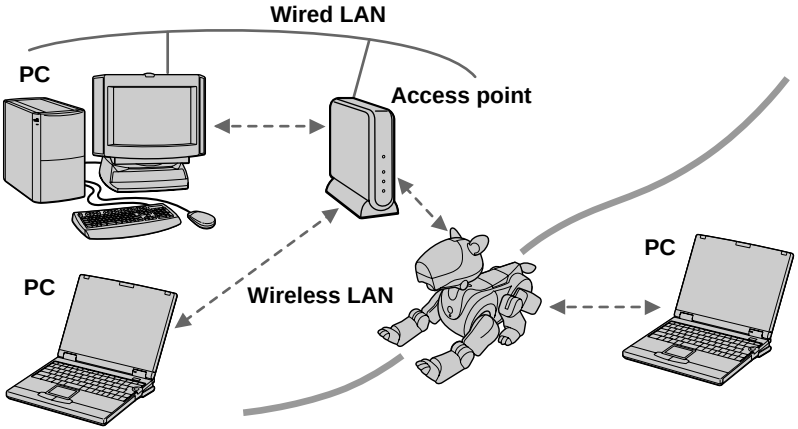
Overview

The AIBO Wireless LAN Card ERA-201D1 (referred to as the “LAN card” hereafter), when installed in the AIBO ERS-210, enables AIBO to communicate with a PC equipped with a wireless LAN card. When a wireless LAN access point is used, communication with AIBO is possible from a PC connected to a wired LAN network.

<When an access point is used>



<When an access point is not used>

The concurrent use of AIBO-dedicated wireless LAN applications on the PC and AIBO-ware* “Memory Stick” in AIBO makes it possible to enjoy AIBO to its full potential through wireless LAN communication.

* AIBO-ware is a program which is capable of running AIBO and is manufactured by Sony Corporation or other third parties.

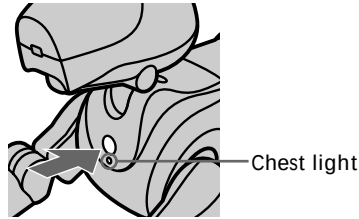
System requirements

The wireless LAN card must be used in conjunction with the following:

- “AIBO” ERS-210
- AIBO-ware “Memory Stick” for wireless LAN communication
- AIBO-dedicated wireless LAN application software for operation on the PC
- A personal computer running AIBO-dedicated PC application software and capable of being connectable to a wireless LAN
- An IEEE802.11b-compatible wireless LAN card or an IEEE802.11b-compatible access point (to allow wireless communication from a PC connected to a wired LAN)
- A Web browser (installed on the PC for changing AIBO’s network settings)

Installing the LAN card into AIBO

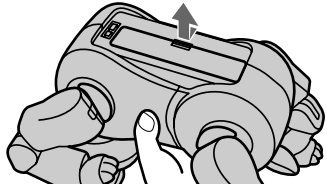
1 Press the pause button on AIBO's chest to make it pause.



Note

While AIBO is accessing the "Memory Stick," the battery pack lock indicator appears red. Do not remove the "Memory Stick" during this time to prevent damaging AIBO. The battery pack is locked until the data-saving procedure is complete. Removing it forcibly may damage AIBO.

2 Grasp AIBO by the body, turn it upside down, and then open its stomach cover.

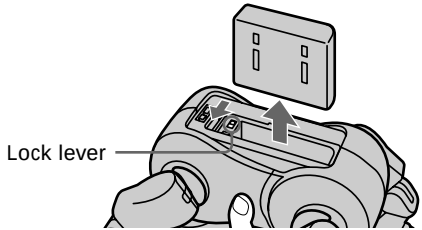


Notes

- Lift AIBO by the body, and not by its extremities.
- Do not touch the charging terminal with your hand. Doing so may soil the terminal and cause poor contact.

3 Slide the lock lever and remove the battery pack.

Check that the battery pack lock indicator appears white.

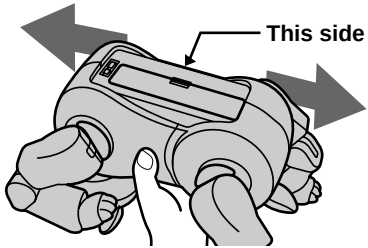


Note

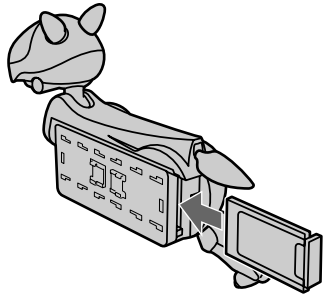
When the battery pack lock indicator appears red, the battery pack is locked. Removing it forcibly at this time may damage AIBO.

4 **Insert and press the pin supplied with AIBO into the release holes for AIBO's left front and left hind legs, and remove them.**

The PC card insertion slot appears.



5 **With the antenna on the LAN card oriented towards the right, push the LAN card firmly into the slot.**

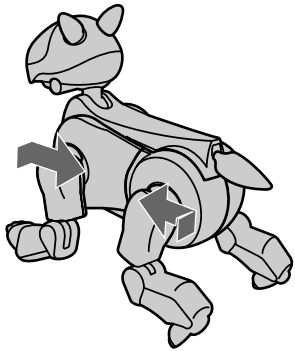


Note

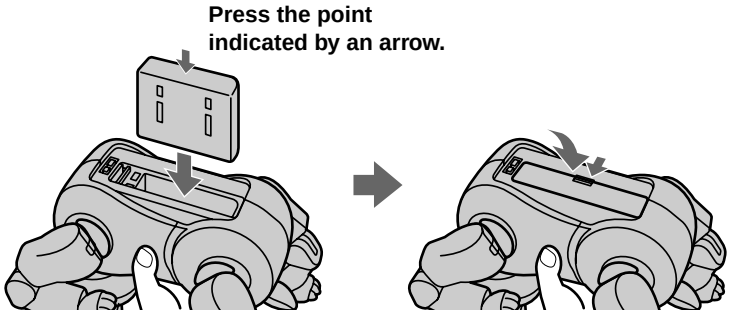
When you insert the LAN card, push the base of the antenna or both ends of the card. Pushing the projecting part of the antenna may damage it.

6 **Fold down the ejection button so that it is flat against the core unit of AIBO.**

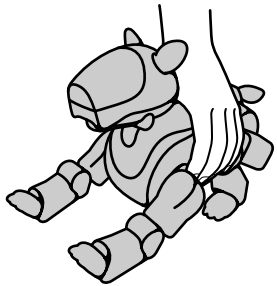
7 **Replace the left front and left hind legs.**



8 **Re-insert the battery pack until it clicks into place, and close the stomach cover.**



9 **Place AIBO on the floor as shown below.**

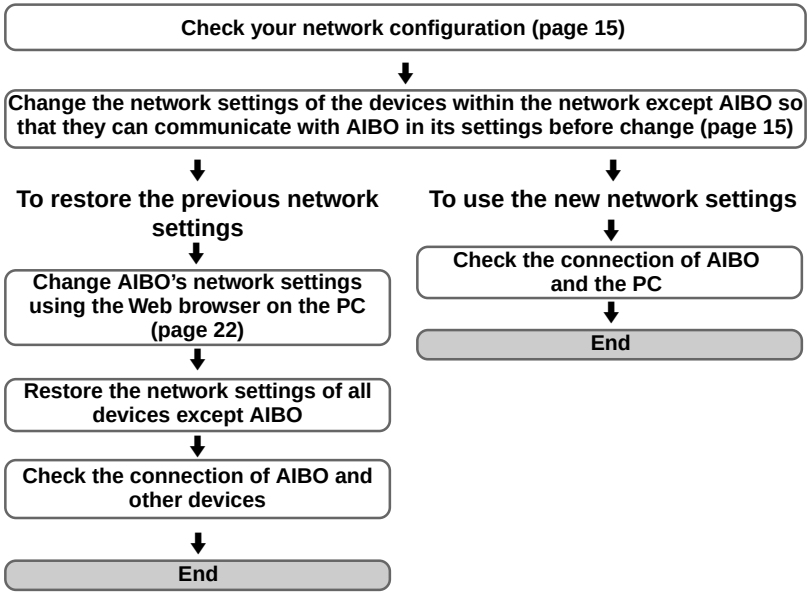


Making network settings

For explanation of network-related terms, see “Glossary” on page 34.

Network setting procedure

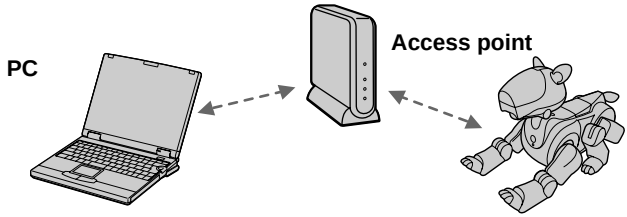
The procedure outline of network settings for AIBO is as follows:



Network configuration and settings

Depending on the devices within the network, select one of the following four types of wireless LAN network configuration and make settings accordingly.

a) There is an access point and communication is conducted through the access point from a wireless LAN-enabled PC



AIBO and the PC can communicate with each other through the access point.

Settings for the access point

Set the following items for the access point so that it can communicate with AIBO in its default settings.

SSID: AIBONET
WEP key: AIBO2
Wireless channel: any channel between 1 and 11
LAN address: 10.0.1.1
LAN subnet mask: 255.255.255.0
DHCP server function: ON (whenever possible)

Settings for the PC

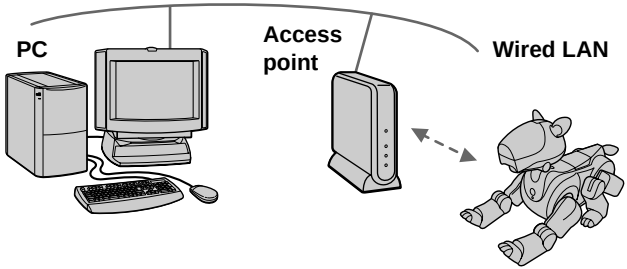
Set the following items for the PC.

SSID: AIBONET
WEP key: AIBO2
Communication mode: infrastructure mode (access point mode)
IP address: When the DHCP server is available, set this item to “Acquire the IP address automatically.” Otherwise, set it to “10.0.1.101”.
Subnet mask: 255.255.255.0

Note

You may find it impossible to set the SSID for some access points currently available in market. When you use one of these, first change the LAN network configuration as described in c) or d) below so that communication is conducted through the access point from a PC and AIBO, then change AIBO’s network settings so that they correspond with the settings on the access point. And then, restore the previous LAN network configuration.

b) There is an access point and communication is conducted through the access point from a PC connected to the wired LAN network and devices within the wireless LAN network



AIBO and the PC can communicate with each other through the access point.

Settings for the access point

Set the following items for the access point so that it can communicate with AIBO in its default settings.

Operation mode: Bridged mode or ISDN router mode
SSID: AIBONET
WEP key: AIBO2
Wireless channel: any channel between 1 and 11
IP address: 10.0.1.1
Subnet mask: 255.255.255.0

Settings for the PC

Set the following items for the PC.

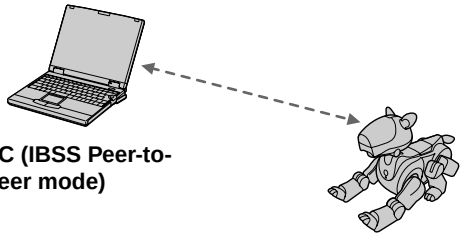
IP address: 10.0.1.101
Subnet mask: 255.255.255.0

Notes

- You may find it impossible to set the SSID for some access points currently available in market. When you use one of these, you cannot change the settings for AIBO through a PC connected to the wired LAN network. Use a PC which is connectable to the wireless LAN network.
- Changing the settings for the access point or the PC connected to the wired LAN network may affect other operating devices connected to the same network. In such case, disconnect the access point and the PC to which the settings are made, then change AIBO's network settings. And then, restore the previous LAN network configuration.

c) An access point is not used, all personal computers are equipped with wireless LAN cards, and at least one of the PCs is set to IBSS Peer-to-Peer mode.

To confirm that the PC is properly set to IBSS Peer-to-Peer mode, refer to the operation manual supplied with the wireless LAN card for the personal computer.



PC (IBSS Peer-to-Peer mode)

Settings for the PC

Set the following items for the PC in IBSS Peer-to-Peer mode so that it can communicate with AIBO in its default settings.

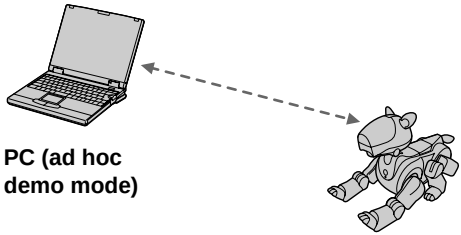
SSID: AIBONET
WEP key: AIBO2
Wireless channel: any channel between 1 and 11
IP address: 10.0.1.101
Subnet mask: 255.255.255.0
Communication mode: IBSS Peer-to-Peer mode

Note

The settings above can be changed after you change the settings for AIBO.

d) An access point is not used, all personal computers are equipped with wireless LAN cards, and none of the PCs is set to IBSS Peer-to-Peer mode

Set AIBO and the PC to ad hoc demo mode.



PC (ad hoc demo mode)

Settings for the PC

Set the following items for the PC in ad hoc demo mode so that it can communicate with AIBO in its default settings.

WEP key: AIBO2
Wireless channel: 3
IP address: 10.0.1.101
Subnet mask: 255.255.255.0
Communication mode: ad hoc demo mode

Note

The settings above can be changed after you change the settings for AIBO.

AIBO's network settings

Settings must be made for AIBO on the following items. Once the communication has been established, you can change the settings according to your network environment. For the explanation on items below, see "Glossary" on page 34.

Item	Description	Default setting
Hostname	The name of AIBO to be used for wireless LAN communication. Up to 8 alphanumeric characters can be entered.	AIBO
IP Address	IP address	10.0.1.100
Subnet Mask	Subnet mask value	255.255.255.0
IP Gateway	Gateway address	10.0.1.1
SSID	The name of the wireless LAN network to be used. Up to 32 alphanumeric characters can be entered.	AIBONET
WEP key	The character string to be used as the key for encrypting data transmitted over the wireless LAN. Input five alphanumeric characters. Do not enter if data need not be encrypted.	AIBO2

Item	Description	Default setting
Operating mode	Specify infrastructure mode or ad hoc demo mode.	See below*.
Wireless channel	Specify this item when ad hoc demo mode is selected. A number from 1 to 11 can be entered for this LAN card.	3

* First, AIBO searches for an access point whose SSID and WEP key settings are identical with those on AIBO. If an applicable access point is found, AIBO starts up in infrastructure mode. If not, AIBO starts up in ad hoc demo mode.

Changing AIBO's network settings

You will need a PC installed with a Web browser and capable of being connected to a wireless LAN network to change AIBO's wireless LAN settings.

1 Set up the access point and the personal computer.

For details on how to make the respective settings, refer to the operation manual supplied with each product.
For details on the settings a) to d), see pages 15 to 20.

2 Insert AIBO-ware “Memory Stick” for wireless LAN communication into AIBO and press the pause button on its chest to start it.

For details on how to insert a “Memory Stick” into AIBO, refer to the operating instructions supplied with AIBO.

3 Start up the Web browser on the personal computer and open the following URL for setting AIBO.

http://10.0.1.100/SETUP.HTM

4 Set the network-related items for AIBO (page 21, 22).

5 Click the “Change Settings” button.

Once you click the button, all settings made in step 4 are entered. Be sure to check each setting before you click the “Change Settings” button. If you made a mistake, reset the items (page 24) and repeat steps 1 to 5 to enter the correct settings.

6 **Press the pause button on AIBO's chest to pause AIBO.**

The settings made will be applied next time you start up AIBO.

7 **Restore the previous network environment.**

8 **Verify that you can communicate with AIBO from the PC.**

If you made a mistake on the settings/
If AIBO does not operate after you have changed the settings

Press AIBO's pause button to make it pause, remove the wireless LAN card from AIBO, and then start up AIBO again.
When you start up AIBO without the LAN card, all network-related settings are reset. Do the procedure again to re-enter the settings.

Precautions

Safety

Do not drop or cause a mechanical shock to the wireless LAN card, as this may damage the card.

Installation

Do not place the wireless LAN card where it will be exposed to the following conditions:

- Direct sunlight or extreme heat. (Use this LAN card within 5°C and 35°C (41°F and 95°F).)
- In the car parked in the sun or on the dashboard of a car, especially in summer.
- Magnetic location (near magnet, speaker, or TV).
- Excessive dust.
- Unstable or inclined surface.
- Location subject to severe vibrations.
- High humidity or poor ventilation.
- Near obstacles which may block radio waves, such as metal or concrete walls.

Moisture condensation

If the LAN card is brought directly from a cold place to a warm place, moisture may condense inside or on outside surface of the card, causing damage. If moisture condensation has occurred, wait for a few hours before using the LAN card.

Cleaning

Clean the casing with a soft cloth, lightly moistened with water or a mild detergent solution. Do not use any type of abrasive pad, scouring powder or solvent such as alcohol or benzine as it may damage the finish of the casing.

Troubleshooting

If you experience any of the following difficulties, use this troubleshooting guide to remedy the problem. Should the problem persist, contact the dealer from whom you purchased the card or the AIBO Customer Link (refer to the "AIBO" ERS-210 Operating Instructions).

■ Wireless communication

Symptom	Cause/Remedy
The PC cannot communicate with AIBO.	The wireless LAN card is not inserted into AIBO correctly. → Check that the wireless LAN card is inserted correctly (page 9). The network settings are incorrect. → Make network settings again (page 14).
Data transmission is slow.	There is radio interference from another access point or a wireless LAN device. → Change the wireless channel setting. There are too many clients logging through the access point. → Try accessing later.
You have forgotten the WEP key.	There is no way to find out the current WEP key. → Remove the LAN card from AIBO and restart it to restore the default network settings, then make the network settings again (page 24).

Symptom	Cause/Remedy
No communication occurs even when the access point (or the PC with the wireless LAN card) is located within 50 meters (165 feet) of AIBO.	The effective communication distance depends on the location and the surrounding conditions. → Move AIBO and the PC closer to the access point.

■ AIBO

Symptom	Cause/Remedy
AIBO does not turn on after you insert the wireless LAN card.	The wireless LAN card is not inserted into AIBO correctly. → Check that the LAN card is inserted correctly (page 9).
AIBO does not operate.	The wireless LAN card is not inserted into AIBO correctly. → Change the wireless channel setting (page 22). AIBO's internal battery pack is drained. → The inserted LAN card consumes certain amount of the power of AIBO's internal battery pack. Charge the battery pack.

Limited warranty

SONY ELECTRONICS INC. (“SONY”) warrants this Product and its accessories against defects in material or workmanship as follows:

1. PRODUCTS: For a period of one (1) year from the date of purchase, SONY will, at its option, either repair or replace the defective parts and/or the Product (i.e., AIBO Wireless LAN Card) with new or rebuilt replacements. After this one (1) year period, you must pay all parts and labor charges.

2. ACCESSORIES: For a period of thirty (30) days from the date of purchase, SONY will, at its option, either repair or replace defective parts and/or accessories (i.e., AC adapter and battery pack) with new or rebuilt replacements. After this thirty (30) day period, you must pay all parts and labor charges.

3. REPAIRS: For a period equal to the longer of (a) the remainder of the original limited warranty period on the original Product or accessory, or (b) for 90 days after the date of repair/replacement of Products or for 30 days after the date of repair/replacement of accessories, SONY will repair or replace defective parts, accessories and/or Products used in the repair or replacement of Products or accessories under this Limited Warranty with new or rebuilt replacements.

To obtain warranty service, you must first obtain an event number from AIBO Customer Link (page 4). You will need to return the Product and all accessories to SONY in the original carton, using the original packaging materials. All supplied accessories must be returned with the Product. SONY is not responsible for any damage during shipment arising from the failure to properly pack the Product or accessory being returned to SONY. For information on returning your Product or accessories for warranty repair,

please contact the AIBO Customer Link.
This warranty does not cover customer instruction, installation or set up adjustments.

This warranty does not cover the cost of removal or reinstallation, cosmetic damage or damage due to acts of God, accident, misuse, abuse, negligence of, or to any part of the Product. This warranty does not cover lost profits, lost sales, loss of use of the Product, or other consequential loss or damage due to improper operation or maintenance, installation, connection to improper voltage supply, or attempted repair by anyone other than a facility authorized by SONY to service the Product. This warranty does not cover Products sold AS IS or WITH ALL FAULTS, or consumables (such as fuses). This warranty does not apply when the malfunction results from use of the Product in conjunction with accessories, products or ancillary or peripheral equipment not manufactured by SONY, and where it is determined by SONY that there is no fault with the Product itself.

SONY will pay shipping charges for all in-warranty service. However, if no trouble is found with the Product or accessory, if the trouble is from a non-covered charge or if it is determined that the warranty period has expired, you will be billed for the cost of shipping and handling.

This warranty is valid only in the United States.

Proof of purchase in the form of a bill of sale or receipted invoice which is evidence that the unit is within the Warranty period must be presented to obtain warranty service.

This warranty is invalid if the factory applied serial number has been altered or removed from the Product.

REPAIR OR REPLACEMENT AS PROVIDED UNDER THIS WARRANTY IS THE EXCLUSIVE REMEDY OF THE CONSUMER. SONY SHALL NOT BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES FOR BREACH OF ANY EXPRESSED OR IMPLIED WARRANTY ON THIS PRODUCT. EXCEPT TO THE EXTENT PROHIBITED BY APPLICABLE LAW, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ON THIS PRODUCT IS LIMITED IN DURATION TO THE DURATION OF THIS WARRANTY.

Some states do not allow the exclusion or limitation of incidental or consequential damages, or allow limitations on how long an implied warranty lasts, so the above limitations or exclusions may not apply to you. This warranty gives you specific legal rights, and you may have other rights which vary from state to state.

For your convenience, SONY ELECTRONICS INC. has established telephone numbers for product information regarding the Entertainment Robot. Please call:

AIBO CUSTOMER LINK
1-800-427-2988

or write to: aibosupport@info.sel.sony.com

Other information about AIBO is also available on the internet site at:
www.aibo.com/

Service procedure

1. Contact the AIBO Customer Link. Its E-mail address is aibosupport@info.sel.sony.com and its toll free number is 1-800-427-2988.
2. If the AIBO Customer Link determines that your unit needs repair, follow the procedure described below.
   a. The AIBO Customer Link will give you the event number, which is valid for ten days.
   b. Following the procedure described on the label attached to the box, put AIBO or the designated accessories into the original box. If you did not keep the original box, the AIBO Customer Link will send a new box to you free of charge within the warranty period. The actual shipping and material cost will be charged to you after the warranty period.
   c. Mark your event number on the top of the box and send it to the designated address. The AIBO Customer Link will designate the shipping method and pay the shipping charges within the warranty period; after the warranty period, you must pre-pay the shipping charges.
   d. As soon as the repair is completed, your AIBO or the accessories will be sent back to you. After the warranty period has expired, the actual shipping cost will be charged to you together with the repair cost.
3. Please understand that the AIBO Customer Link only accepts credit cards for all the charges of repair, shipping and material after the warranty period has expired.

User registration

All users are registered based on information from the purchaser.
If a different person takes over this unit, please inform the "AIBO Customer Link" of the change.

Specifications

Power requirements
: 3.3 V

Power consumption
: 330 mA (max. during transmission), 240 mA (max. during reception)

Connector
: Type-II PC card slot

Dimensions
: Approx. $90 \times 12 \times 53$ mm ($3\ ^{5}/_{8} \times\ ^{1}/_{2} \times 2\ ^{1}/_{8}$ inches) (w/h/d)

Mass
: Approx. 35 g (1 oz.)

Protocol
: TCP/IP

Standards
: IEEE802.11b/IEEE802.11

Frequency band
: 2.4 GHz

Wireless channels
: 1 to 11

Modulation method
: DS-SS (conforming to IEEE802.11)

Operating temperature
: 5°C and 35°C (41°F and 95°F) (without condensation)

Storage temperature
: –20°C and 60°C (–4°F and 140°F) (without condensation)

Supplied accessories
: Operating Instructions

Design and specifications are subject to change without notice.

Glossary

Access point

A networking device with both wireless communication interface and telephone line or Ethernet interface, which bridges across the wireless LAN and wired LAN. For wireless communication, SSID, wireless channels to be used, and WEP key must be specified for the access point.

Ad hoc demo mode

A transmission method for devices equipped with a wireless LAN card (for example, a PC and AIBO), which does not require the access point. In ad hoc demo mode, you must specify wireless channel and WEP key for both AIBO and a personal computer. When you select ad hoc demo mode, you cannot specify SSID.

DHCP (Dynamic Host Configuration Protocol) server

When you construct a network using TCP/IP, an IP address must be specified for all the devices within the network. When a DHCP server is included within the network, it assigns an IP address automatically for all devices. The access point or Windows NT/2000 server can serve as the DHCP server.

IBSS (Independent Basic Service Set) Peer-to-Peer mode

When you set at least one PC within the wireless LAN network to IBSS Peer-to-Peer mode, all devices within the network can communicate with each other without an access point. The only difference between IBSS Peer-to-Peer mode and ad hoc demo mode is that SSID can be specified for the IBSS Peer-to-Peer mode while it cannot be specified for the ad hoc demo mode. When there is no access point within the network, at least one personal computer must be set to IBBS Peer-to-Peer mode and the rest of the personal computer and the wired LAN devices must be set to infrastructure mode.

IEEE802.11b

A standard for wireless LAN network which uses the 2.4 GHz band for communication. Maximum transmission rate is 11 Mbps. This LAN card conforms to IEEE802.11b.

Infrastructure mode

Also referred to as “Access point mode.” This mode is used when a device equipped with a wireless LAN card communicates with the access point. In this mode, the wireless channel specified by the access point is used for communication. For AIBO, you must specify SSID and WEP key which matches those on the access point.

IP address

Number used for identifying the device within the TCP/IP network. An IP address consists of four numbers each of which is from 0 to 255.
Example: 192.168.1.1
10.0.1.1

LAN (Local Area network)

A relatively small network usually constructed using the Ethernet, with transmission rate from 10 Mbps to 100 Mbps. When an access point is used, a wireless LAN and wired LAN can be connected.

SSID (Service Set ID)

Also referred to as “access point ID” or “group name.” The SSID is specified through the access point or the personal computer which is set to IBSS Peer-to-Peer mode, and is used for communication within wireless LAN network as the network name.
The SSID can be entered using up to 32 alphanumeric characters.

Subnet mask

An IP address consists of four numbers each of which is from 0 to 255 (see IP address). For more efficient operation, an IP address is divided into two components: network component and host component. The subnet mask is the value set for dividing the IP address into the network segment and host segment. In subnet mask, the digits specified as “1” (in binary code) determines network component.

Example: The network component and host component of the device whose IP address is 192.168.1.2 when the subnet mask is 255.255.255.0
192.168.1: network component
2: host component

TCP/IP (Transmission Control Protocol/Internet Protocol)

A protocol which the personal computer within the network uses for communication. TCP/IP is used in Internet and is used the most world wide. This LAN card uses TCP/IP for communication. In order to communicate using TCP/IP, a device requires the IP address which works as ID number.

WEP (Wired Equivalent Privacy)

WEP encrypts data transmit through the wireless LAN to prevent tapping of information.
To activate WEP, characters to be used as the key for encrypting the data being transmit using the wireless LAN must be specified. Input five alphanumeric characters.

Wireless channel

In IEEE802.11b wireless LAN standard, 2.4 GHz band is divided into 14 channels. To prevent an RF interference, separate channels can be specified for different wireless networks which are close to each other. This LAN card can use channels 1 to 11. In infrastructure mode, a channel specified by the access point is used by all the devices within the network. In ad hoc mode, the channel must be specified by all the devices within the network.

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