Introduction

Thank you for Choosing Harman Kardon. With your purchase of a new AB 1 Amplified In-Wall Module you will be able to extend the flexibility of your home entertainment system so that it delivers sound to another room in your home. Custom-designed for use exclusively with Harman Kardon® A-BUS/Ready® receivers, the AB 1 enables you to send a separate source to the remote room and power most speakers without the need for an additional amplifier through one single Category 5/5e cable. Thanks to a built-in IR sensor, you may also control source selection, operate compatible Harman Kardon source components and turn the system on and off using the Zone II remote packaged with your receiver.

In order to fully enjoy the benefits of remote keypad control, please take a few minutes to read this owner's manual. It contains important information that will guide you through the correct and safe installation of your Amplified In-Wall Module. If you do not have experience installing in-wall electrical and telecommunications components, you are advised to consult with a qualified low-voltage contractor or custom installer.

If you have any questions about this product, its installation or its operation, please contact your retailer or custom installer. They are your best source of product information.

Designed for simple installation by a custom installer or advanced do-it-yourself hobbyist, the AB 1 will add to your listening pleasure by distributing sound beyond the confines of your main listening room with the level of performance and product design elegance Harman Kardon has been known for throughout its fifty-year history.

Features

- Simple connection to any A-BUS/Ready Harman Kardon receiver
- Touch button control for volume up/down
- Built-in IR sensor for control of compatible Harman Kardon source devices
- Decora®-style wall-plate blends perfectly with other in-wall electrical controls
- Mounts in most standard electrical junction boxes or plaster rings
- Uses standard Category 5/5e cable and RJ-45 connections for easy installation

Typographical Conventions

In order to help you use this guide with the front-panel controls and rear-panel connections, the following typographical conventions have been used:

Example – Indicates a specific front-panel button or rear-panel connection jack

1 – Indicates a specific front-panel control or indicator

❶ – Indicates a rear-panel connection

Important Safety and Installation Information

Low-voltage wiring systems must be properly installed to minimize the possibility of accidental contact with hazardous power and lighting wiring. Never place remote control wiring near bare power wires or lightning rods, antennas, transformers, steam or hot water pipes, or heating ducts. Never run low voltage wire in any conduit, box, channel, duct or other enclosure containing power or lighting circuits of any type. In addition to ensuring proper separation between any AC power wiring and the Category 5/5e cable used for A-BUS,® it is important to avoid running the A-BUS cable in parallel to any AC wiring. Always maintain at least the minimum separation between AC wiring and the A-BUS cable or ANY low-voltage cable that is required by the NEC or any applicable local building codes or regulations.

Make sure to follow all instructions when preparing wiring for use with the AB 1 module. Failure to do so may result in a potential safety hazard, including possible danger to persons and/or equipment.

If you will be running the cable through a ventilation plenum, remember to use plenum-rated cable to comply with NEC and other safety requirements. Failure to do so may result in a potential fire or safety hazard.

Always observe the appropriate safety codes for concealed wiring. Be extremely careful not to cut through or drill into concealed wiring or pipes. Make a small inspection opening before cutting or drilling.

Dust or dirt can cause special problems on wiring contacts. Be sure all contacts are clean, and that all parts are installed correctly to protect them from dust and dirt.

Your new Harman Kardon AB 1 Amplified In-Wall Module has been custom-designed for use with Harman Kardon's A-BUS/Ready products and it is also compatible with other A-BUS-compatible systems. Do not connect it to any other device.

The AB 1 is only to be installed by qualified personnel and as per the requirements of all applicable state and local building codes, as well as NEC (National Electrical Code) requirements. Check with your local authorities as needed to ensure that all wiring inside walls is installed in compliance with the proper standards. Failure to do so may present a potential safety hazard.

If you have any doubt about your ability to work with electrical and telecommunications wiring, you are advised to hire a professional licensed electrician or custom installer to install this product.

Installation Planning

The AB 1 may be installed in any location appropriate for standard in-wall electrical components. You are responsible for selecting and properly installing an appropriate electrical junction box or plaster ring. Be sure to check the fit of the box or ring with the AB 1 before installation into the wall.

Since the AB 1 uses a built-in infrared sensor to relay commands to the A/V receiver, be sure to avoid installing the AB 1 in an area subject to potential interference with the IR signal. Possible sources of interference include plasma video displays, dimmer-controlled lighting, bright sunlight, and reflective surfaces such as mirrors or blank walls. You may wish to temporarily place the component to be controlled using the sensor in the proposed location in order to test the integrity of IR signals.

When determining the specific location for an AB 1, keep in mind that it should be in a convenient place where it may be operated manually, or that, when it is used with a remote control, the mounting position enables the built-in IR sensor to "see" commands from any place in the room. In practice, the AB 1 may be mounted close to other wall switches, but remember that the AB 1 should NEVER be installed in the same gang box as any switch or product, such as a light switch or dimmer, where AC line voltage is present.

When planning the installation, it is also wise to consider the distance from the AB 1 module to the speakers, particularly when they are in-wall or ceiling mounted. Be certain that there are no solid walls or load-bearing structures that would prevent the speaker wires from reaching their location.

The wiring used to connect the AB 1 to the A-BUS/Ready receiver may be Category 5, 5e (or better) wiring. Be certain that any safety requirements mandating the use of plenum wiring are taken into account. The speaker wiring should also be in-wall rated as required, and may not exceed 14 AWG. To simplify wiring you may wish to use two-pair CL-3 rated in-wall wiring and run a single cable from the AB 1 to both locations. One pair will be used to connect the first speaker and the other will continue to the second speaker.

Speaker Selection

The AB 1 is compatible with most modern in-wall or ceiling speakers, provided that they have an efficiency rated at 88dB or greater. Minimum speaker impedance is six ohms.

It is possible to run two pairs of speakers from one AB 1, but we do not recommend that due to the degradation in performance.

What Is Included

Your AB 1 in-wall module includes two mounting screws: self-starting, universal-head machine screws.

You are responsible for providing a Decora-style wall-plate, available in a variety of colors and finishes at your local hardware retailer.

You are also responsible for providing the speakers and a sufficient length of Category 5/5e (or better) UTP (unshielded twisted pair) cable and an RJ-45 modular plug. The wiring scheme is the standard TIA T568A configuration. The maximum length should not exceed 150 feet in order to avoid degrading the signal. Further information on the correct wiring configuration is provided in these instructions.

Front-Panel Controls
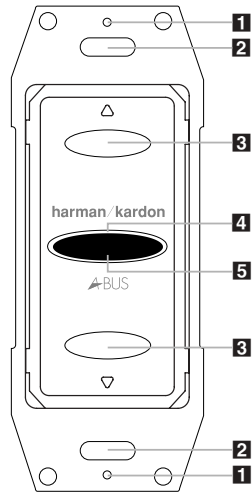
1 Screw Holes – After you have completed installation, these screw holes accept the screws supplied with your Decora-style wall plate to attach it to the AB 1.

2 Screw Slots – Use the supplied machine screws to attach the AB 1 to an electrical junction box or plaster ring through these slots.

3 Volume ▲/▼ Buttons – Pressing these buttons raises or lowers the volume level of the speakers connected to the AB 1.

4 IR Sensor – This sensor receives signals from a remote control, such as the Zone II remote supplied with Harman Kardon multichannel-capable receivers, and passes them on to the receiver or other compatible source components.

5 Status LED – The LED behind the red window will light when the AB 1 is connected to an A-BUS/Ready receiver that is turned on. It is now ready to accept control commands, as long as the AVR's Multiroom system is activated. It will flash when a command is received from a compatible remote control.

Rear-Panel Connections
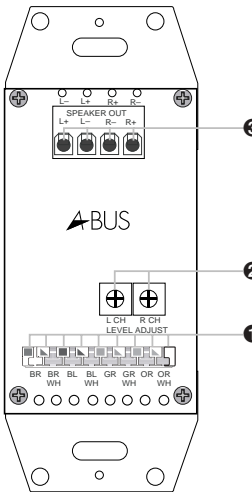
❶ Input Cable Connection Block – Using standard IDT punch-down tools, connect the Category 5/5e cable linking the AB 1 to the receiver to this connection block in accordance with the color code printed on the circuit board.

❷ Output Level Trims – These trim pots are used to match the output level of the AB 1 module to the specific speakers in use.

❸ Speaker Terminal Block – The wire used to connect the AB 1 to your speakers is connected to this terminal block. Insert the wire in accordance with the color coding shown and then tighten the screw. Note that the maximum wire size is 14 AWG.

Installation and Connection

IMPORTANT SAFETY NOTES:

- Before beginning the installation process, make certain that all electronic products in the system are turned off and disconnected from their A/V power connection. This avoids the possibility of accidental activation, which could possibly damage the equipment or cause personal injury. Do not turn on the equipment until instructed to do so.
- Be certain to observe all appropriate safety measures when installing any wiring, including, but not limited to, the use of eye protection when required, and attention to the required distances between low-voltage wiring and high-voltage AC mains wiring.

Step One: Run a Category 5/5e cable from the receiver location to the module.

Run a splice-free Category 5/5e cable from the location where the AB 1 module will be installed to the location where the A-BUS/Ready receiver is placed. At each end, make certain to leave sufficient wire for ease of installation. Any extra wire may be trimmed back during the installation. Remember that you will need to have access to the rear of the AB 1 after the module is connected, but before the module is secured into the wall box.

Step Two: Prepare and install an RJ-45 plug at the receiver end of the system.

The connection and cable termination at the receiver end of the installation is a standard RJ-45 connector using the TIA T568A configuration.

Connect an RJ-45 plug to the end of the wire as follows. Looking at the connector with its clip down and the wires coming out of the connector toward you, numbered from left to right, the typical pin colors are as follows:

Pin #	Striped Wire Pairs	Solid Wire Colors
1	White with Green Stripe	White
2	Green	Green
3	White with Orange Stripe	White
4	Blue	Blue
5	White with Blue Stripe	White
6	Orange	Orange
7	White with Brown Stripe	White
8	Brown	Brown

Note that one wire in each pair is always a solid color, and the other is either white or striped. Make sure that the twisted pairs of wires consist of those attached to pins 1 and 2, pins 3 and 6, pins 4 and 5, and pins 7 and 8.

When making the connections at each end of the cable, strip the outer insulation jacket about 1-1/2" to 2" from the end. The cable is constructed of four twisted pairs of wires as indicated above. Flatten the wire ends to prepare them for insertion into the connector. Fully insert the wire into the connector, being certain to check the color codes of the pin assignments one last time. Carefully crimp the connector, making sure that each wire is securely fastened.

Step Three: Connect the Category 5/5e cable to the AB 1.

Once the wire is run to the remote location where the AB 1 will be installed, connect the Category 5/5e cable to the AB 1.

Prior to making the connections, strip the outer jacket of the Cat. 5/5e cable 1-1/2" to 2" from the end, taking care not to nick the inner conductors. Next, separate the four twisted pairs within the cable and then untwist the ends of each pair about 1/2."

All terminations are made at the **Input Cable Connection Block ❶**. Connect the wires using standard Insulation Displacement Terminal (IDT) tools and procedures. DO NOT use screwdrivers to insert the wire into the IDT connection points. Also, take special care to make certain that there are no shorts between any of the individual wires, as this may cause damage to the AB 1. From left to right, the connections are made as follows:

- Brown
- White w/Brown Stripe
- Blue
- White w/Blue Stripe
- Green
- White w/Green Stripe
- Orange
- White w/Orange Stripe

BR BR BL BL GR GR OR OR
WH   WH   WH   WH

Step Four: Connect the speaker cable to the AB 1.

Connect speaker wires to the AB 1 module using the color-code chart on the **Speaker Terminal Block ❸** as a guide. Be careful to properly observe the positive (+) and negative (–) polarity indications, and to avoid having the wire strands from one cable touch another.

Insert the wire into the terminal block. Tighten the retaining screws to secure the wire.

Step Five: Connecting the AB 1 to the A-BUS/Ready product.

To set the output trims, the AB 1 must first be connected to the A-BUS/Ready receiver. After first checking to make certain that the connections to the speaker cable and Cat. 5/5e cable have properly been made, plug the RJ-45 jack at the receiver end of the cable into the A-BUS jack on the back of the A-BUS/Ready receiver.

Next, turn on the receiver and make any adjustments required to turn on the Multiroom system and send an active source to the output. As a confirmation that the connections have been made and that receiver is on, the **Status LED ❺** will light up.

So that the level adjustments are as accurate as possible, select a program source or music type that is representative of what will most often be listened to in the room where the A-BUS module will be installed.
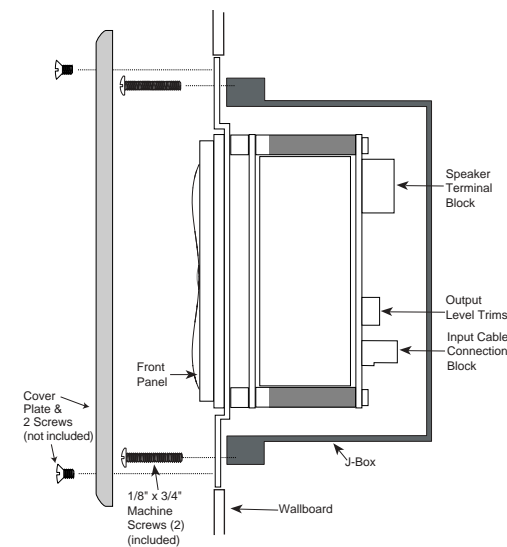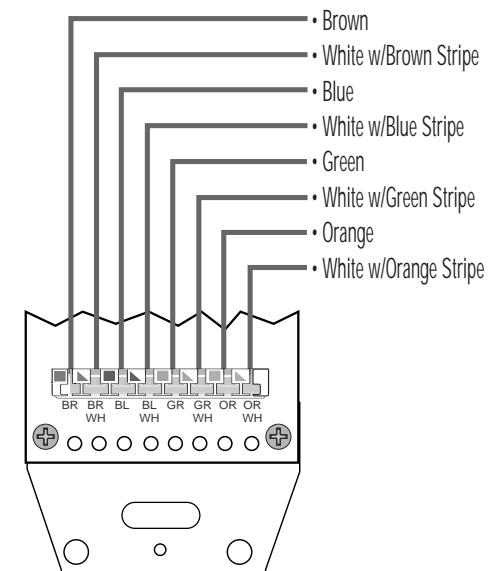
Step Six: Adjust the output levels.

This step sets the level adjustments for the AB 1. Once this process is complete, all further volume settings are made with the **Volume Up/Down Buttons ❸** on the AB 1, the Zone II remote, or an optional third-party remote that is programmed for Harman Kardon products.

With the Multiroom system activated and a source playing, press the **Volume Up Button ❸** for 20 seconds so that the AB 1's volume is set at its maximum. Next, adjust each of the **Output Level Trims ❷** until the output begins to clip. At this point, back the trim control down in the opposite direction until the clipping stops. This is the correct level for your specific A-BUS/Ready receiver and AB 1. Before proceeding further, lower the volume back to normal listening level using the **Volume Down Button ❸**.

Step Seven: Install the AB 1.

Place the AB 1 in the junction box or plaster ring, making sure that any loose wire is carefully secured inside the wall or box, and that there are no shorts between any of the connections.

Cover Plate & 2 Screws (not included)

Front Panel

Speaker Terminal Block

Output Level Trims

Input Cable Connection Block

J-Box

1/8" x 3/4" Machine Screws (2) (included)

Wallboard

Using the supplied mounting screws, attach the AB 1 to the junction box or plaster ring through the **Screw Slots ❷**.

Attach a Decora-style wall plate (not included) through the AB 1's **Screw Holes ❶**. Although any color Decora wall plate may be used with the AB 1, the AB 1 itself should not be painted.

Operation

Once the AB 1 is properly connected and the levels have been set, operation is simple.

In order to use the AB 1 module, the A-BUS/Ready receiver must be turned on and placed in the Multiroom mode. The procedure for doing this will vary from model to model, so we suggest that you consult the owner's manual for your receiver for the correct instructions. As long as the receiver is powered up, and the Multiroom system is turned on, the AB 1's amplifier may be turned on by simply pointing the Zone II remote supplied with the unit, or any remote programmed with the proper Harman Kardon IR codes, at the AB 1's **IR Sensor ❹** and pressing the remote's Power On button.

You may adjust the volume in the remote room by pressing the **Volume Up/Down Buttons ❸** on the AB 1 or with the volume control buttons on the remote. The remote may also be used to operate the receiver to change sources and make other adjustments, such as changing the station on the tuner. When the proper IR codes are programmed in the remote being used, you may also operate compatible source components, such as CD or DVD players, that are connected to the IR remote output jack on the receiver.

To turn the remote room feed off, press the OFF button on the Zone II or other properly programmed remote.

Troubleshooting Guide

If you cannot hear any sound from the speakers connected to the AB 1:

- Make certain that the Cat. 5/5e cable is properly connected to both the AB 1 and receiver.
- Make certain that the receiver is turned on and that the Multiroom mode is properly activated.
- Make certain that any needed volume-level adjustments on the receiver are properly made.
- Make certain that the volume control on the AB 1 is turned up.
- Check for proper adjustments of the output level trims.
- Check the speaker connections.

If the receiver or other components do not respond to commands from the AB 1 or a remote pointed at the AB 1:

- Make certain that the A-BUS/Ready receiver's Multiroom system has been turned on.
- Make certain that the Cat. 5/5e cable is properly connected to both the AB 1 and receiver.
- Make certain that there is a proper connection between the A-BUS/Ready receiver and any additional IR controlled components.
- Make certain that the remote is properly programmed to operate the receiver and other components.

Other notes on using the AB 1 and other A-BUS products with Harman Kardon A-BUS/Ready receivers:

- When using the AB 1 with Harman Kardon A-BUS/Ready products, you may connect only one AB 1 at a time unless optional, external A-BUS-powered hub equipment is used.
- If A-BUS keypads or other A-BUS accessories not specifically designed for use with Harman Kardon products are used, their operation may be slightly different than with the AB 1. Consult the support area of the Harman Kardon Web site at www.harmankardon.com.

Specifications

- Wire type required: Category 5/5e (or better) cable in compliance with any applicable local building code or NEC requirements for in-wall, riser or plenum use.
- Wiring protocol: TIA wiring specification for T568A at the A-BUS/Ready product end. Connections at the AB 1 are specified on the AB 1.
- Connection terminals: IDT type for Category 5/5e wire, screw terminal type for speaker connections.
- Speaker wire: Maximum AWG 14, in compliance with any applicable local building code or NEC requirements for in-wall, riser or plenum use.
- Speaker impedance: Suitable for connection to speakers with nominal 6 ohms to 8 ohms impedance.
- Speaker sensitivity: Optimized for speakers with sensitivity above 88dB.
- Infrared compatibility: 38kHz and 56kHz, with talkback
- Dimensions (H x W x D): 4-1/4" x 1-3/4" x 2-1/4"
- Weight: 0.25 lb

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A-BUS

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AB 1
Amplified In-Wall Module