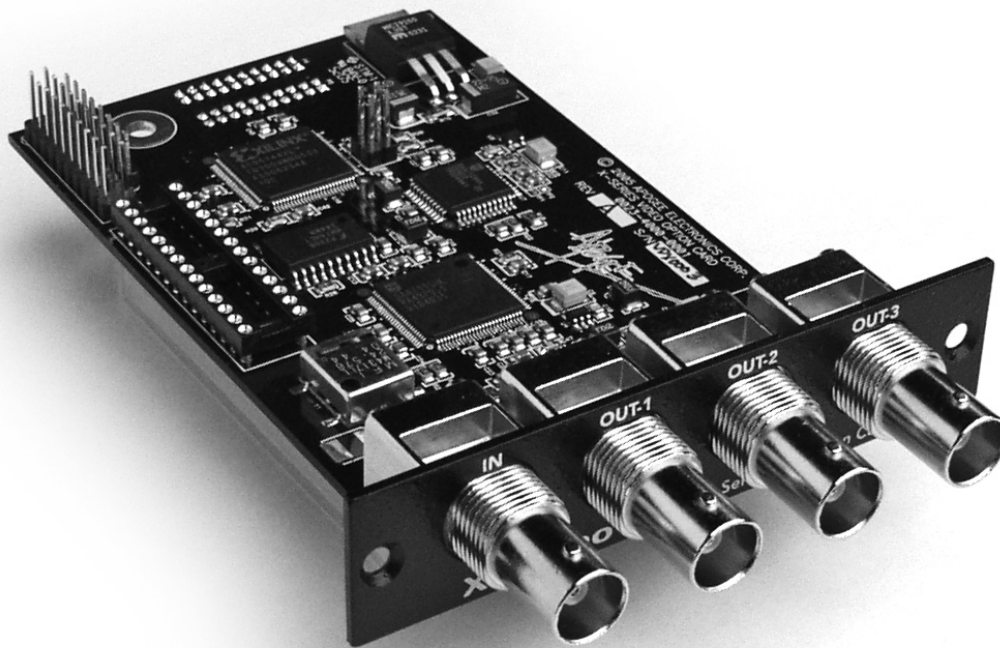


X-Series

Expansion Cards



X-Video Card

User's Guide
v1.0 - February 2006



Warnings

FCC warning

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when operated in a commercial environment. 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. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to take whatever measures necessary to correct the interference at his own expense.

Copyright Notice

The Apogee X-Video card is a computer-based device, and as such contains and uses software in ROMs. This software, and all related documentation, including this User's Guide contain proprietary information which is protected by copyright laws. All rights are reserved. No part of the software and its related documentation may be copied, transferred, or modified. You may not modify, adapt, translate, lease, distribute, resell for profit or create derivative works based on the software and its related documentation or any part thereof without prior written consent from Apogee Electronics Corporation, U.S.A.

Declarations of Conformity

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

(2) This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits of 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. 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:

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

NOTE: The use of non-shielded cable with this equipment is prohibited.

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

Apogee Electronics Corporation, 1715 Berkeley St., Santa Monica, CA 90404.
Betty Bennett, CEO.

Industry Canada Notice

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations. Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

Declaration of Conformity – CE

Apogee Electronics Corporation hereby declares that the product, the X-Video card, to which this declaration relates, is in material conformity with the following standards or other normative documents:

- EN50081-1/EN55022; 1995
 - EN50082-1/IEC 801-2, 3, 4; 1992
- following the provisions of:
- 73/23/EEC – Low Voltage Directive
 - 89/336/EEC – EMC Directive

Declaration of Conformity – Japan

Apogee Electronics Corporation hereby declares that the X-Video card, to which this declaration relates, is in material conformity with the VCCI Class A standard.

Declaration of Conformity – Australia

Apogee Electronics Corporation hereby declares that the X-Video card is in material conformity with AN/NZS standard requirements.

Registration and Warranty Information

Be sure to register your X-Video card, either by filling in the enclosed Registration Card or by completing the on-line registration form at our Web site: <http://www.apogeedigital.com/support/>. If you do so, Apogee can contact you with any update information. As enhancements and upgrades are developed, you will be contacted at the registration address. Firmware updates are free for the first year of ownership unless otherwise stated. Please address any inquiries to your dealer or directly to Apogee at:

**APOGEE ELECTRONICS CORPORATION,
1715 Berkeley St., Santa Monica, CA 90404, USA.
TEL: (310) 548-9394, FAX: (310) 584-9385
Web: <http://www.apogeedigital.com/>**

APOGEE ELECTRONICS CORPORATION warrants this product to be free of defects in material and manufacture under normal use for a period of 12 months. The term of this warranty begins on the date of sale to the purchaser. Units returned for warranty repair to Apogee or an authorized Apogee warranty repair facility will be repaired or replaced at the manufacturer's option, free of charge.

ALL UNITS RETURNED TO APOGEE OR AN AUTHORIZED APOGEE REPAIR FACILITY MUST BE PREPAID, INSURED AND PROPERLY PACKAGED, PREFERABLY IN THEIR ORIGINAL BOX. Apogee reserves the right to change or improve design at any time without prior notification. Design changes are not implemented retroactively, and the incorporation of design changes into future units does not imply the availability of an upgrade to existing units.

This warranty is void if Apogee determines, in its sole business judgment, the defect to be the result of abuse, neglect, alteration or attempted repair by unauthorized personnel.

The warranties set forth above are in lieu of all other warranties, expressed or implied, and Apogee specifically disclaims any and all implied warranty of merchantability or of fitness for a particular purpose. The buyer acknowledges and agrees that in no event shall the company be held liable for any special, indirect, incidental or consequential damages, or for injury, loss or damage sustained by any person or property, that may result from this product failing to operate correctly at any time.

USA: Some states do not allow for the exclusion or limitation of implied warranties or liability for incidental or consequential damage, so the above exclusion may not apply to you. This warranty gives you specific legal rights, and you may have other rights which vary from state to state.

Service Information

The X-Video card contains no user-serviceable components: refer to qualified service personnel for repair or upgrade. Your warranty will be voided if you tamper with the internal components. If you have any questions with regard to the above, please contact Apogee.

In the event your X-Video card needs to be upgraded or repaired, it is necessary to contact Apogee prior to shipping, and a Return Materials Authorization (RMA) number will be assigned. This number will serve as a reference for you and helps facilitate and expedite the return process. Apogee requires that shipments be pre-paid and insured — unless otherwise authorized in advance.

IMPORTANT: ANY SHIPMENT THAT IS NOT PRE-PAID OR IS SENT WITHOUT AN RMA NUMBER WILL NOT BE ACCEPTED.

OWNER'S RECORD

The serial number is located on the top of the unit. We suggest you record the serial number in the space provided below. Refer to it whenever you call an authorized Apogee Electronics repair facility or the manufacturer. Please be sure to return your completed warranty card immediately!

X-Video card Serial No. _____

Purchase Date _____

Dealer _____

Phone _____

Address _____

CAUTION:

Any changes or modifications not expressly approved by APOGEE ELECTRONICS CORPORATION could void your authority to operate this equipment under the FCC rules.

Please register this unit by filling in the included registration card, or registering online at <http://www.apogeedigital.com/support/register.php>. Please read this manual – if you call for technical support, we'll assume that you have. There will be a quiz.

X-Video Card

User's Guide

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Introduction

The Apogee X-Video card expands the video capability of the Big Ben Master Clock, offering one video input and three video outputs.

X-Video Requirements

The X-Video card operates exclusively with Apogee's Big Ben Master Clock; Big Ben firmware 2.0 or higher must be installed.

To easily determine Big Ben's firmware version, power on Big Ben and observe the pattern in which the termination LEDs light during boot-up; if version 2 firmware is installed, the red LEDs light in a descending pattern while the green LEDs light in an ascending pattern.

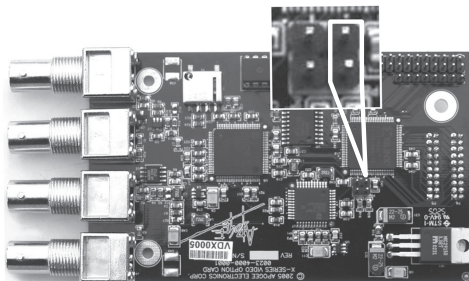
Getting Started Quickly


- 1 Install the X-Video card (see p. 5)
- 2 Install Big Ben version 2.0 firmware (if required).
- 3 Connect video inputs and outputs to the appropriate X-Video BNC, and set Big Ben to operate the X-Video card in **Master**, **Slave** or **Standalone** mode (as described on p.4).

X-Video I/O

1 (terminated) video input - accepts any analog composite video signal.

3 video black burst outputs – output is formatted as a black burst signal. By installing a shunt across jumper P8 (on the X-Video card as shown below), a 75% color bar is generated on the outputs.



 Please note that when an X-Video card is installed in a Big Ben, Big Ben's chassis-mounted Video/Word Clock BNC input will *only* accept word clock signals; video reference input signals should be connected to the X-Video **IN** BNC connector.

X-Video Operating Modes

Once the X-Video card has been installed, new CLOCK SOURCE selections become available on Big Ben; these selections configure the X-Video card into one of three operating modes: **Master**, **Slave** and **Standalone**.

Master – In Master mode, the X-Video card generates the reference for all Big Ben's outputs as well as the three X-Video card's outputs; the X-Video output format may be set to NTSC, PAL or B&W (black & white). Signal present at the X-Video **IN** BNC is ignored. To configure the X-Video card to operate in Master mode, follow these steps:

- 1** Scroll through Big Ben's CLOCK SOURCE selections until both INT and VIDEO are lit.
- 2** Press the NEXT button until the sample rate flashes, and select the desired sample rate.
- 3** Press the NEXT button again until one of the three video formats flashes (NTSC, PAL, B&W), and select the desired X-Video output format.

Slave – In Slave mode, Big Ben is locked to the video reference signal present at the X-Video **IN** BNC. To configure the X-Video in Slave mode, scroll through Big Ben's CLOCK SOURCE selections until VIDEO is lit; the video format is automatically detected as being either NTSC, PAL or B&W (black & white) format.

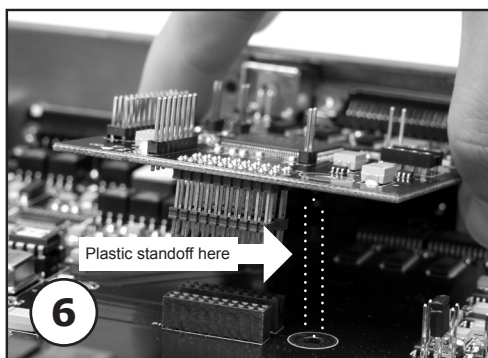
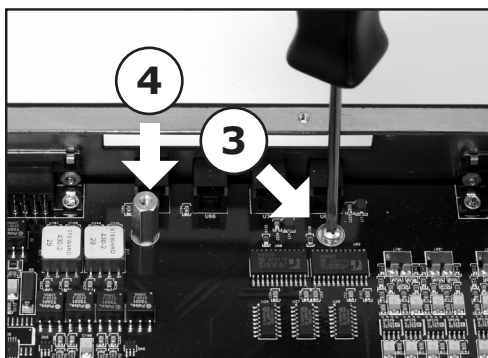
Standalone- When Big Ben Clock Source is set to any setting besides INT VIDEO or VIDEO, the X-Video card will accept a video input and regenerate it to the 3 video outputs, but with no clock synchronization with the selected Big Ben CLOCK SOURCE. Thus, the X-Video card acts as an asynchronous distribution amplifier.

Installing the X-Video card

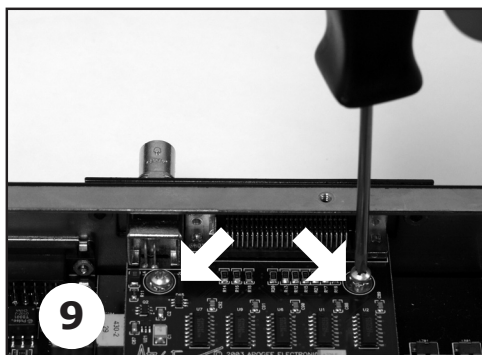


Your X-Video card should include the following:

- 1 X-Video circuit board
- 1 X-Video Coverplate
- 2 aluminium standoffs
- 1 plastic standoff
- 1 manual



- 1 Remove the top cover of Big Ben.
- 2 Remove the Option Card coverplate, and set aside the screws for later use.
- 3 Remove the two interface circuit board screws indicated at left, and set them aside for later use
- 4 Install the two aluminium standoffs in the threaded holes vacated by the screws.
- 5 On the X-Video card, install the plastic standoff in the hole adjacent to the multi-pin motherboard connector.
- 6 Install the X-Video Coverplate, and secure it to the host interface using two screws from Step 2.
- 7 Insert the BNC connector end of the X-Video card through the appropriate cutouts in the coverplate, and carefully place the multi-pin motherboard connector in the mating connector found on the host interface motherboard.
- 8 After verifying the alignment of the multi-pin and the mating connectors, firmly press down on the X-Video card, over the connector, until the pins are completely seated in the mating connector.
- 9 Re-install the circuit board screws from Step 3 in the locations indicated below.
- 10 Replace the top cover of Big Ben.





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