**ANALOG
DEVICES**

AD723 Evaluation Board Operating Instructions

Input Connections

Power

The AD723 Evaluation Board can be powered by a 3-3.3V dc wall-type power supply that connects to P3. The center pin of connector P3 is positive. Optionally it can be powered by +3-3.3V and ground via P6. While the AD723 itself can operate up to a 5V supply, the oscillators that are on the board are designed to operate from a 3V supply. If these are replaced by 5V parts, then the board can be operated from 5V.

J8 is provided as a place to break the power to the DUT so that only its current consumption can be measured. If J8 is removed, an ammeter can be connected across its pins to measure the DUT current. J9 is a jumper that connects +Vs to the rest of the board.

Video

The male end of the VGA extender cable is plugged into the source of RGB video (15-pin Video port of a PC). The female end connects to P2 on the AD723EB.

Video Termination

The AD723EB is delivered with the three video input signals directly terminated with 75Ω to ground by the installation of jumpers J5, J6 and J7 in the "B" position. Alternatively, the jumpers in the "A" position will cause the termination to happen through the termination switches on the AD723. The TERM signal, Pin 4, is controlled by J3. With J3 open, R18 pulls TERM high, and the termination switches are closed (shorted to ground). This will terminate the RGB signals when there is no RGB monitor connected to P1. With J3 shorted, TERM is low and the termination switches will be open. An RGB monitor connected to P1 will provide the termination of the video signals.

Bypass/Encode Switch

SW1 can be used to select between the AD723 Encode path and the VGA Bypass path. SW1 switches the HSYNC and VSYNC of the video source at P2 to either the AD723 or to P1 to be used by the RGB monitor. The video signals are directly connected to both devices. In the Bypass position, Pin 3 (CE) is grounded, which disables the AD723 and puts it in power down mode.

Subcarrier and Video Standard

The AD723 has only one subcarrier option. It must be 4 x fsc of either the NTSC or PAL frequency and must be an actively driven (TTL compatible) logic-level signal. The evaluation board comes with a 14.31818 MHz oscillator installed in position Y2 for NTSC operation and a 17.734480 MHz oscillator

installed in position Y1 for PAL operation. The board is designed to accept either full-size (14-pin DIP) or half-size (8-pin DIP) oscillators. An 8-pin oscillator package should be installed by shifting it toward the positions of pins 7 and 8 of the 14-pin footprint.

The NTSC/PAL selector switch (SW2) selects between the two oscillators and provides the appropriate logic signal to pin1 (STND). This switch also selects the frequency of the luma trap formed by L1, C10, C14, D1 and R2. Refer to the AD723 data sheet for further information on luma trap operation.

Output Connections

There are two options for video out. One can be used at a time, or both can be used simultaneously. Composite video is output on the RCA (phono) connector, while S-video (Y/C Video) is available on the 4-pin circular DIN connector. This output can be connected to the S-Video input of a TV with the supplied cable.

The board is set up in the active termination mode, which is the low-power option. Note that it is also dc coupled, so it does not require large coupling capacitors. As stated in the data sheet, this is scheme offers mostly advantages without disadvantages. However, component positions are provided for direct termination, which is described in the data sheet.

In general, S-Video will result in better picture quality due to limitations of the composite video circuitry used in TV monitors. It is highly recommended that S-Video be used whenever it is a feasible option.

The outputs are only active when there is an appropriate termination. Otherwise they are automatically powered down. The detection circuitry is only on the Composite and Luma outputs. If a Luma load is detected, then Chroma will also be active. Likewise, when no Luma load is detected, then Chroma will also be powered down.

When either or both loads are detected, Pin 18 (TVDET) will go high. This will also light up LED CR1.

Software

The software used for the AD723EB was developed for previous encoder products, but is still usable for the AD723, however, it must be run from DOS. It is not compatible with Windows 95 or later. The software can be run from the floppy disk, or can be installed on a hard drive. By running the INSTALL program, the software will be loaded into a directory called "TV".

A TSR (Terminate and Stay Resident) program called TV.EXE is used to change the scanning of the graphics controller to interlaced format, 60 Hz for NTSC or 50 Hz for PAL, and performs the appropriate vertical scaling to make the VGA format fit into a composite video frame. The software works with most popular graphics controller chips, although it is not guaranteed to work with every one. In particular, many laptop computers will not be compatible, because of conflicts with driving the LCD in addition to the VGA monitor.

To run the TSR with NTSC scanning, the command to use is TV -N [RETURN], and for PAL it is TV -P [RETURN]. The TSR can be unloaded by command TV -U [RETURN], but this can only be performed from the non-interlaced scanning mode.

Once the TSR is running, the hot-keystroke command ALT-BACKSPACE will toggle the graphics controller between non-interlaced (VGA) mode and interlaced (TV-video) mode.

The DEMO file contains a collection of pictures for viewing the TV image quality. Alternately, any other programs can be run to test the performance.