



BOB-I Developer Notes ~ February 4, 1997

BOB-I uses the Rohm BU5963AS On-Screen Display (OSD) chip to generate a video character display. The 5963 is a consumer video component that was designed primarily for use in TVs, VCRs, camcorders, etc. Two fundamentally different modes of operation are possible in this chip: 1> In *overlay* mode, BOB-I gen-locks to incoming video sync. Characters are superimposed on video from the external source. 2> In *generate* mode, characters are inserted into a locally generated video background. No external video source is necessary.

5963DEMO is a simple DOS PC-hosted demonstration program that also provides a convenient starting point for BOB-I application software development. Comments in the source code (provided) describe the structure and use of the 5963's control registers in a way that should be more readily assimilated, compared to Rohm's hardware documentation. In any case, both documents should be at hand before commencing with product development.

Before using the demo software, BOB-I must be connected to a 12VDC power supply (refer to the schematic), a video input signal source, and a video monitor on the output side. The video source isn't strictly necessary, because BOB-I can generate his own video, but the demo program defaults to *overlay* mode. Your first encounter with BOB-I will be less confusing if you provide a camera, video generator, or some other video signal source to drive the input.

Power up BOB-I *before* invoking the demo program. In most cases (prior to software initialization) video will pass through BOB to your monitor.

The demo program will run directly from the floppy, or you may copy it to any convenient location on your hard disk drive. BOB-I must be connected to LPT1 or LPT2 using the cable assembly provided in Decade's BOB-I Developer Package (or equivalent). To start the program, just log in to the directory where it resides and type "5963DEMO <Space> nnn <Enter>," where "nnn" is a three-digit number for the parallel port address (in hex), typically 378 if BOB-I is connected to LPT1. 278 will often be correct for LPT2. No other parallel port addresses are possible without editing and recompiling the demo program.

If BOB-I refuses to work with your computer, the problem may be related to excessive processor speed and/or parallel port incompatibility. Late-model PCs often use weak drivers for the printer port control signal lines, which will cause insufficient rise time on the clock line to BOB-I. You can check this with a scope- if you see rise time in the neighborhood of 5~10uS on BOB's clock line, and you're running a fast CPU (486 or better), then BOB may never see

enough clock amplitude to latch its data! One known cure for this problem is to run the demo program in a DOS window in Windows 95. That slows execution so much that the clock line has plenty of time to rise fully. Another known cure is to add a 1K Ω pullup (to V+5) resistor on BOB-I's clock line.

5963DEMO implements a rudimentary on-screen text editor. Upon successful startup, you will see a flashing white block cursor in the upper left corner of the video overlay. Characters typed on the PC keyboard will appear at the current cursor location. The cursor will move to the right as you type. It will move down and to the left end of each new line as you continue typing past the end of a line. Words don't wrap (they break). The PC cursor keys will work more-or-less as expected, and the backspace/rubout key will also do its job. The F1 key controls character color, *but you must type a new character to see its effect*. The color of characters already on screen will not be altered. F2 controls the next character's blink attribute in similar fashion.

With 5963DEMO running, the PC screen displays a simple "Control Panel" that allows all of the OSD chip's registers to be edited on the fly. An underline cursor at the left edge of the screen shows the currently selected register (actually, some fraction of a register). This cursor may be moved up and down the list with F3 and F5. It stops before reaching the last two items because they're handled by F1 and F2 (see above). You can change the value of any selected register with F4 and F6. Changes are immediately written to BOB-I and their effects are visible instantly. Note that bizarre or missing video overlays are possible with some register settings! This is, after all, a developer's tool. It was not meant to replace your application program.

F7 rewrites the entire overlay memory with a color bar test pattern. This pattern does not consist of the "standard" NTSC primaries & secondaries. Instead, BOB-I's colors are the result of arbitrary subcarrier phase increments used in the OSD chip. The pattern appears offset to the right of center, because bar number one (color value = zero) is transparent, rather than black.

F8 clears the overlay screen by writing blanks to all character cells. The cursor will be moved back to its starting location.

A few of the PC keys will translate to graphic characters in the video overlay, but 5963DEMO makes no provision to display all the character graphics provided by the OSD chip. Many of these could be useful, depending on the job you have to do. Work out a coding scheme for them to suit your application, or simply send the literal codes listed in the Rohm spec if you only need to create a few non-dynamic graphic objects.