

**Addendum**

**Speaker**

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A description of the speaker was omitted in Versions 1.0 and 1.1 of the IOP Reference Manual. This addendum provides that information.

A 3-inch speaker is housed inside the display pedestal. Sound is produced from the speaker when a stream of electrical pulses is sent, driving the speaker diaphragm in and out. This action produces the pulses of air movement that make up sound.

The volume of the speaker is fixed and no adjustment is provided. The sound pitch is related to the shape of the waveform, thus is controlled by software.

Two sources can generate the waveform: the IOP 80186 and the PCE 80186.

In the case of the IOP, the internal Timer-0 of the 80186 generates the waveform. It is programmed for dual max count mode; the ALT control bit is set High. Bit 14 of the external Control register is then turned ON to enable the drive. If Max-Count-Reg-B is being used for current count, then the timer output will be Low. If Max-Count-Reg-A is being used, then the timer output will be High. Refer also to section 2.2.3.

In the case of the PC, the waveform is derived from Timer 2 of the 8254, as in a standard PC. Refer to "Dove PCE Board Technical Reference Manual," Version 1.1, January 1987.

The following figure illustrates speaker logic.

