NoteTaker
A Portable Computing System

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Subject: **NoteTaker I/O Devices**

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This is a short summary of the NoteTaker I/O devices and the things which it takes to test them.

Keyboard Interface (I/O processor board)

This device runs at a 60 Khz bit rate. All the basic timing is handled by the 6402 UART. The keyboard is always waiting for a polling signal from the processor. The proceesor polls the keyboard by sending *anything* on the line going to the keyboard. This line going to the keyboard is merely the output line of the UART. The UART sits on the low order half of the bus. The following port addresses are of interest in relation to this device:

0000 0000 010X 1000 (48H)- Loads the control register
0000 0000 010X 1010 (4AH)- Loads the transmitter register and sends character
0000 0000 010X 1100 (4CH) - Clears the "data ready" output
0000 0000 010X 1110 (4EH) - Clears the chip

0000 0000 010X 0000 (40H) - Unused
0000 0000 010X 0010 (42H) - Read data in receive register (you must then clear DR)
0000 0000 010X 0100 (44H) - This places two status bits from the UART on the line. Bit 15 (LSB) is a one if the transmitter register is ready for a new character. Bit 14 is one if there has been a character recieved on the input line (DR). Bits 12 and 13 are status bits for the FIFO on the D/A converter, but that's a different story.
0000 0000 0000 010X 0111 - Unused

The data received bit and the transmitter empty bit are or'ed together and connect to interrupt #6 on the I/O processor.

Digital to Analog Converter:
There is a 16 word FIFO on the front end of the DAC. The processor loads this FIFO by writing to port location:

0000 0000 110X XXXX (C0H)

The FIFO expects the data bits in the high order 12 bits of the word.

The status of the FIFO can be determined by reading port location:

0000 0000 100X 0110 (86H)

When you read this location, bit 12 will be a one if the FIFO is empty and bit 13 will be a one if the FIFO is ready to accept at least one more word.

There are no interrupts associated with this device.

The frquency at which the data is clocked out of this device is determined by bits 3,4, and 5 of port location:

0000 0000 011X XXXX (60H)

It's too late at this point to figure out again what valuesget you what frequencies. Its like 12Khz, 6Khz, 3Khz, 1.5Khz, etc.

One can program where the outputs of the converter go: channel A or B.
Bits 0, 1, and 2 in the above location determine this.

If bit 0 is a zero, it will force all outputs to channel A.

If bit 0 is a one, then bits 1 and 2 have the following effect:

00 - Channel B
01 - remains in previous state
10 - Alternate samples go to channel A and B
11 - Channel A