Title: Clock Information for AST 286 Computers

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Date: March 6, 1990

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CLOCK INFORMATION FOR AST 286 COMPUTERS

Ronald B. Weimer

The battery backed clock is only read on startup and I could not find a way to adjust its rate. Once the time is read or set by "TIME" command (which does not set the battery clock) the AST keeps time from a second crystal oscillator. A rough block diagram is shown below.

Desired:

\[
\begin{align*}
    f_{\text{osc}} &= 14.31818 \text{ MHz} \\
    U_{36-9} &= 1.1931817 \text{ MHz} \\
    1 \text{ sec/day} &= 0.0000138 \text{ MHz} \\
    \text{at } U_{36-9}
\end{align*}
\]

To prevent loading of oscillator I usually monitored pin 9 of U36. Two oscillator circuits were used. The first AST used is shown below:

The adjustment range of C28 was not large enough so I had to put 55 pF in parallel with C27. This gave a range of 1.193627 to 1.193139 MHz. When using a counter not locked to maser or Rb 5 MHz, I would read the 5 MHz standard and correct for the offset when setting frequency. I did not record what the AST serial number was.
The later units had a different oscillator circuit.

![Oscillator Circuit Diagram]

First one  
SN = 148516 (I think.)

C min -> 1.1933008 MHz  
C max -> 1.1931984 MHz  (Too high!)

Then tried 33 pF in parallel with C41:

C min -> 1.1930968 MHz  
C max -> 1.1929522 MHz  (Too low!)

Tried 11 pF in parallel with C41:

C min -> 1.1932097 MHz  
C max -> 1.1931105 MHz  (O.k.)
Set 1.1931821 MHz.

Serial No. T2O061308 - 3-29-89:

C min -> 1.1932707 MHz  
C max -> 1.1931588 MHz  (O.K.)
Set for 1.1931822 MHz correcting for counter.

Serial No. T2O090300 - 5-18-89:

C min -> 1.1932203 MHz  
C max -> 1.1931355 MHz  (O.K.)
Set for 1.1931826 MHz correcting for counter.