

NATIONAL RADIO ASTRONOMY OBSERVATORY  
GREEN BANK, WEST VIRGINIA

ELECTRONICS DIVISION TECHNICAL NOTE NO. 158

Title: **Clock Information for AST 286 Computers**

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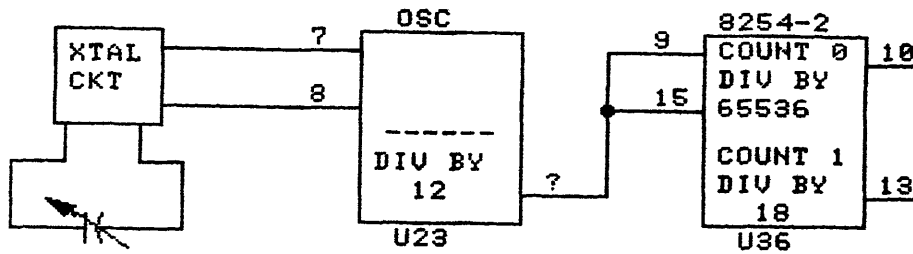


CLOCK INFORMATION FOR AST 286 COMPUTERS

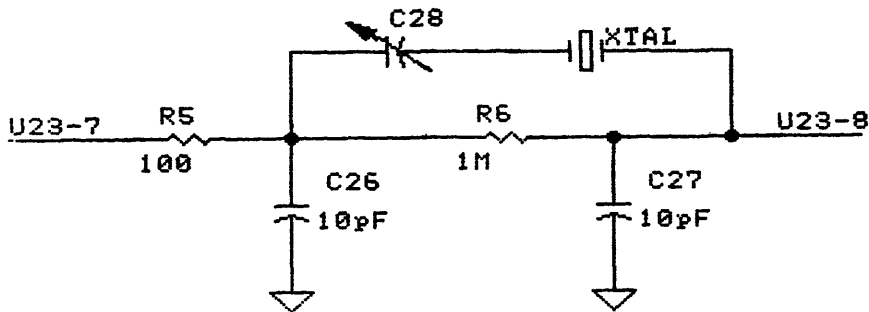
Ronald B. Weimer

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:  
 $f_{osc}$  = 14.31818 MHz  
 $U_{36-9}$  = 1.1931817 MHz  
 1 sec/day = 0.0000138 MHz  
 at  $U_{36-9}$

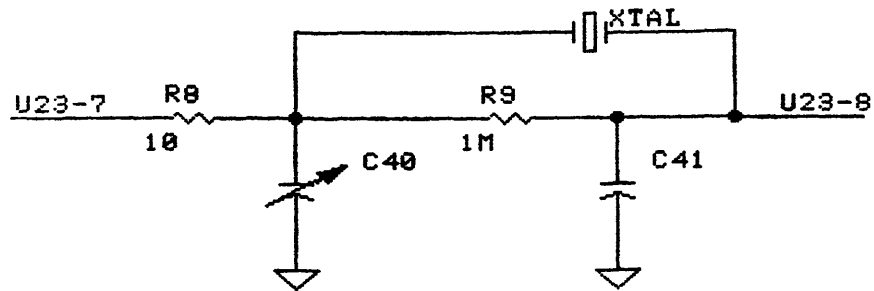


To prevent loading of oscillator I usually monitored pin 9 of  $U_{36}$ . Two oscillator circuits were used. The first AST used is shown below:



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.



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 |  
C max => 1.1931105 | o.k.  
Set 1.1931821 MHz.

Serial No. TW0061308 - 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. TW0090300 - 5-18-89:  
C min => 1.1932203 MHz |  
C max => 1.1931355 MHz | o.k.  
Set for 1.1931826 MHz correcting for counter.