

NATIONAL RADIO ASTRONOMY OBSERVATORY
Charlottesville, Virginia

January 9, 1969

M E M O R A N D U M

To: Addressee

From: A. M. Shalloway and R. Mauzy

Subj: Hardware changes in the 400-channel autocorrelation receiver, Model II.

This memorandum covers changes in equipment which are described or referred to in the following memoranda and publications:

Memorandum dated May 3, 1968, Revised Functional Description of NRAO Correlation Receiver, Model II.

Electronics Division Internal Report No. 75, Autocorrelation Receiver Model II: Operational Description.

Electronics Division Internal Report No. 77, Autocorrelation Receiver Model II: IF Filter System.

Electronics Division Internal Report No. 80, Autocorrelation Receiver Model II: Digital System.

Change No. 1 - Blanking Time

The blanking time control in the digital rack has been changed from one knob to two knobs. The range of control has been changed from 4 - 26 ms to 0 - 126 ms. This allows the time during which the A/C integrates reference to be varied to as little as 2 ms when using the following switch rates:

10 Hz, 50%/50% duty cycle
5 Hz, 75%/25% duty cycle
1 Hz, 90%/10% duty cycle

The blanking time is the sum of the times indicated by the two knobs plus 51 microseconds (\pm 1 microsecond) and is in steps of 2 ms. NOTE: THE BLANKING TIME SHOULD NEVER BE SET TO LESS THAN 4 ms OF SIDEREAL TIME. This time is required for the correlator to process the data.

This change was made to accommodate the observation of pulsars. The increase in blanking capability now requires six instead of four bits of data to be sent to the DDP 116 computer to indicate the blanking time. Because of logical design and spare circuit availability, the blanking time word number 1677 has been made a spare word and the blanking time is now indicated in the six least significant bits of word number 1664.

Change No. 2 - Total Power Counters

The output rate of the voltage-to-frequency converters has been changed from 2000 pulses per second per volt to 20,000 pulses per second per volt. This provides greater resolution and is particularly useful when the integration time within one switching cycle is very short, as in pulsar observations.