# DECUS
## PROGRAM LIBRARY

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| DECUS NO. | 8-175 |
| TITLE | Post Stimulus Interval Histogram for AX-Ø8 |
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| COMPANY | Digital Equipment Corporation<br>Anaheim, California |
| DATE | Submitted: March 28, 1969 |
| SOURCE LANGUAGE | |

a. X=0 is Y = Number of epochs.
b. X=Max is number of intervals.
c. When expanding wrap-around will occur on the display if the expansion is excessive.

Points a & b are of interest for scaling of the display.

9. To start another run:
   a. With the same epoch interval count start at 213
   b. With the same epoch and interval count and adding to the previous data, start at 220.

Specifications

1. Synchronization pulses during an epoch are ignored. The first synchronization pulse after the end of an epoch starts the next epoch.

2. The maximum or minimum interval ("bin") width is limited only by the minimum or maximum high resolution interval allowable by the LAB-8 Master Program.
   a. As of 1/10/69 the minimum is 200μsec.

3. To eliminate the effects of clock jitter a smoothing routine has been incorporated ("window"). At the end of a run prior to the final display, the data is scanned. For each occurrence of a nonzero value the next two bins are scanned and the contents of all three bins summed and placed in the interval which originally contained the maximum count. Because of this feature it is desirable than an interval size be selected such that sequential data is not likely to occur within less than 3 intervals. This is desirable also for purposes of resolution on the 503 display.

4. Test runs with this program indicated good results for epochs of 3 seconds with intervals of 1 msec; i.e.; 3000 intervals.

# POST STIMULUS INTERVAL HISTOGRAM FOR AX-08

DECUS Program Library Write-up DECUS No. 8-175

## ABSTRACT

This program uses the Schmitt triggers to generate a post stimulus interval histogram for one channel. Maximum count per interval is $4095_{10}$ ($7777_8$). Maximum number of epochs is $4095_{10}$ ($7777_8$). Maximum number of intervals is $3456_{10}$ ($6600_8$). Synchronization pulses on S1 and Data on S2.

## OPERATION

1. Use the LAB-8 Compiler to generate two parameter tapes for a single channel analog input with arbitrary constants except for a high resolution interval
(Interval = $\frac{\text{Duration}}{\text{Number of points}}$)
which equals the time interval for a histogram "bin" and
   a. One tape using S1 for synchronization
   b. One tape using S2 for synchronization

2. Load each of these tapes after loading Section II of the LAB-8 Master Program and check the clock calibration as well as
   a. The Schmitt trigger for synchronization 1 triggering
   b. Schmitt trigger 2 for data pulse triggering
(It is necessary to load Section II only once. Using the binary loader, load a parameter tape and start at 7000.)

3. When the clock has been calibrated and the Schmitt triggers are firing properly load the Post Stimulus Interval Histogram program.

4. Start the program at 200.

5. Type in octal the number of epochs (maximum $7777_8$) followed by CR LF.

6. Type in octal the number of intervals (maximum $6600_8$) followed by CR LF. (The epoch length equals the number of intervals times the interval length.)

7. Depending on the clock rate the histogram will be displayed as it is growing.

8. Once the desired number of epochs have been logged the histogram will be displayed continuously:

   a. To expand the abscissa type X+CR LF
   b. To contract the abscissa type X-CR LF
   c. To expand the ordinate type Y+CR LF
   d. To contract the ordinate type Y-CR LF

The following characteristics of the display should be noted: