

digital™

VAXLAB
Data Acquisition
and
Analysis Systems



Components of VAXlab :

- **VAX hardware : busless , MICRO-BUS and VAXBI Systems.**
- **Realtime I/O device(s).**
- **Software Tool Kit VSL for easy Application Development.**



Summary of VAXlab Features/Benefits:

- **Standard I/O Interface Provides Smooth Growth Path as Requirements Change**
- **Signal Processing Subroutines Analyse Analog Input Signals**
- **Powerful Plotting Subroutines Allow for Sophisticated Two or Three-Dimensional Plotting of Research Data**
- **Off-the-Shelf Applications Meet the Needs of Non-Programmer Environments**
- **Programmable from Fortran , Pascal , C ,ADA and Basic.**



VSL components:

- **LIO Laboratory Input Output.**
- **LGP Laboratory Graphics Package.**
- **LSP Laboratory Signal Processing Package.**
- **IDAT Interactive Data Acquisition Tool.**
- **IPLOT Interactive Plot Tool.**
- **Manager.**
- **SSP Scientific Subroutine Package.**
- **PEAK.**
- **Examples.**



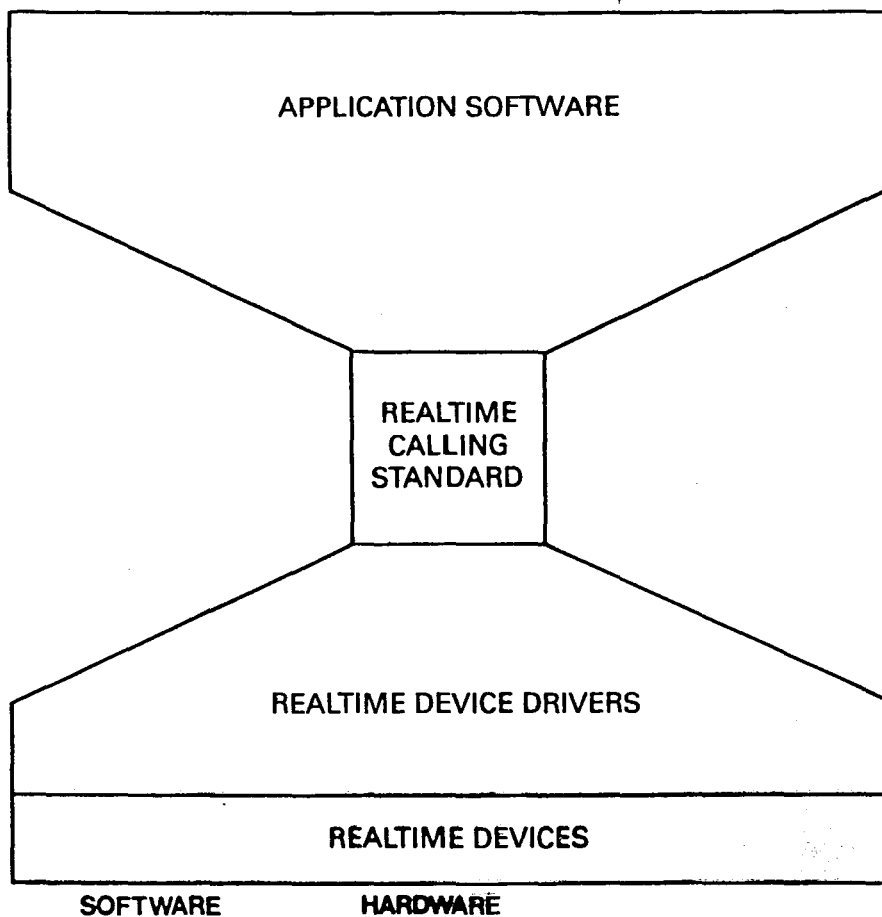
Interactive Data Acquisition Tool

- **Menu-Drive Utility**
- **Collect. Plot. and Analyse Data**
- **Used to Test Systems or Acquire Data in Simple Applications**



LIO Realtime Calling Standard

- **Common Interface Among Wide Range of Devices**
- **Open Architecture**
- **Device-Independent Realtime Software Applications**





LIO Realtime I/O Library:

- **High-level Interface Performs System Level Functions**
- **Supports Polled, Interrupt and DMA I/O**
- **Analog, Digital, IEEE 888, Serial**

LIO Features:

- **Pseudo Devices**
- **Remote Devices**
- **Buffer Forwarding**



Laboratory Input/Output:

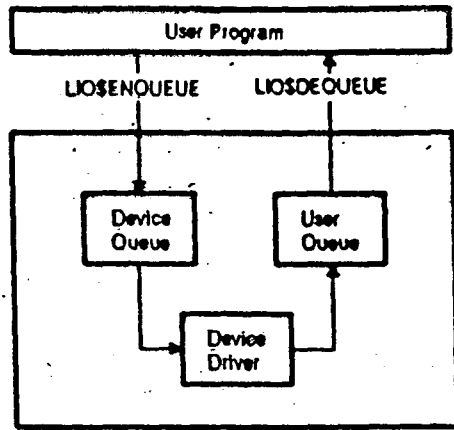
- **Fast I/O under VMS.**
- **Small uniform set of calls.**
- **Low overhead for control.**
- **Queue multiple buffers for high throughput.**
- **Simple I/O.**
- **Flexible I/O.**
- **Fortran , Pascal , C , Basic , ADA and macro.**
- **Goal: Device independance at a family level.**



LIO call overview:

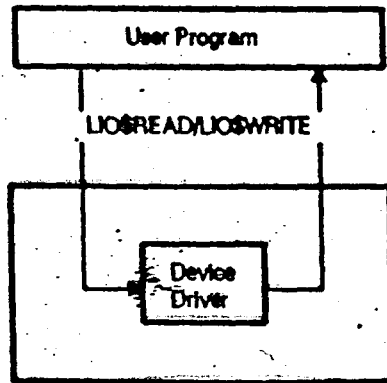
- LIO\$ATTACH (id, dev_nam, lo_type)
- LIO\$SET_I (id, code, n_vals, [val [val...]])
LIO\$SET_R (id, code, n_vals, [val [val...]])
- LIO\$SET_S (id, code, n_vals, [val [val...]])
- LIO\$SHOW (id, code, value_list, list_len)
- LIO\$READ (id, buffer, buff_len, data_len, dev_specif)
- LIO\$WRITE (id, buffer, data_len,[dev_specif])
- LIO\$ENQUEUE (id, buffer, buff_len, [data_len],
[event_flag], [buff_ix], [dev_specif])
- LIO\$DEQUEUE (id, buff_ptr, buff_len, [data_len],
[wait], [buff_ix], [dev_specif])
- LIO\$DETACH (id, [rundown])
- User AST (status, id, buffer, buff_len, [data_len],
[buff_ix], [dev_specif])

LIO Synchronous/Asynchronous support:



DEVICE

MR-1428-0E



DEVICE

MR-1427-0E



VAXlab Signal Processing Library

- **FFT and Power Spectrum**
- **Phase Angle and Modulus Spectrum**
- **Cross- and Autocorrelation**
- **Polynomial Filters**
- **Non-recursive Filter**
- **Data Format Translation**
- **Interval Histogram**



VAXlab Signal Processing Library:

- **2-Dimensional FFT and Phase Angle**
- **Thermocouple Voltage-to-Temperature Conversion**
- **Spectral Windows**

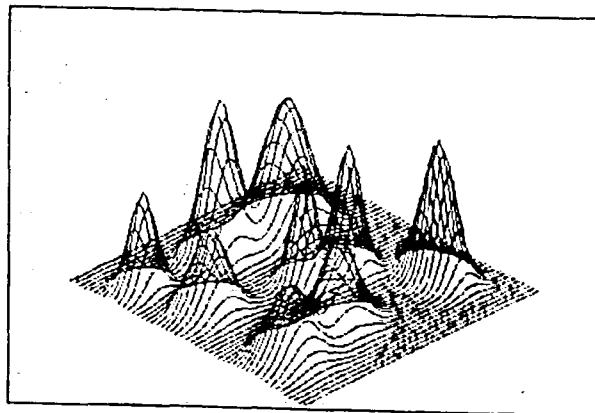
VAXlab Statistic and Numerical Analysis Library

- **Matrix Operations**
- **Means Standard Deviations**
- **Regression**
- **Integral Calculations**
- **First Order Diff Equations**
- **Polynominal Roots**

LPG Features:

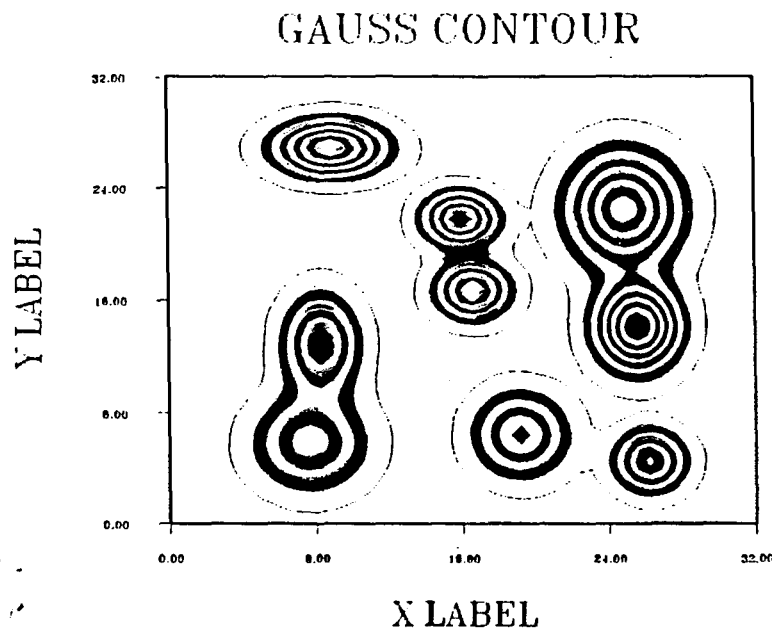
- **Realtime Plotting**
- **Multiple Plot Windows for all Terminal Devices**
- **Device Support**
- **Input Functions**
- **Full Rotation and Tilt for 3-D Plots**

GAUSS PLOT



VAXlab Plotting Library:

- **Plot Mathematical Functions**
- **Configure Axes and Labels**
- **2D, 3D, Contour Plotting**
- **Histogram**
- **Hard Copy Output**
- **File Output**



LGP Devices:

- **Video**
 - **VAXstations**
 - **VT3xx, VT2xx, VT125**
 - **TEK4014, 4107**

- **Printers**
 - **LAXX**
 - **LCP01**
 - **LNxx**
 - **LPS40**

- **Plotters**
 - **LVP16**
 - **HP7550**

- **Input Devices**
 - **Keyboard**
 - **Mouse**



MICRO-BUS Digital Parallel I/O Option:

- **DRV11-J**
64 (4x16) Bit programmed I/O Interface Status Control
Applications TTL Level

- **DRV11-WA**
16 Bit DMA I/O Interface General Purpose DMA Applications
TTL Level BA200 Series Version available

- **DRQ11-CA**
16 Bit Alternate Buffer DMA I/O Interface High Speed, continuous DMA Data Transfer TTL Level, isolated Long Line Driver available

- **DRQ3B-AA**
16 Bit High Performance DMS I/O Interface 512 Word Onboard FIFO Buffer, continuous Block-mode DMA Applications TTL Level
BA200 Series version available



MICRO-Bus Industrial I/O Options:

- **Digital Interface Isolated**
 - **IDV11-A 16 Bit opt isolated input**
 - **IDV11-B 16 Bit opt isolated output**
 - **IDV11-C 16 Bit relay output**
 - **IDV11-D 5 Channel 16 Bit Counter isolated**
- **Analog Interfaces Isolated**
 - **IAV11-A 16 Channel A/D 4 Ch. isolated, 12 Bit**
 - **IAV11-B 4 Channel D/A isolated, 12 Bit**
 - **IAV11-C 16 Channel MUX Extension for IAV11-A**
- **Analog Interfaces not Isolated**
 - **IAV11-AA 16 Channel A/D 12 Bit**
 - **IAV11-KA 16 Channel Solid State MUX for IAV11-AA**
- **The industrial I/O Options are available for BA200 Series.**



MICRO-Bus Analog I/O Options:

- **AXV11-C**
16 Channel 25kHz A/D 2 Channel D/A programm d
I/O Interface
12 Bit General Purpose Applications
BA 200 Series Version available
- **ADV11-DA**
16 Channel 50kHz A/D DMA Interface
12 Bit Progr. Gain 1, 2, 4, 8
Medium Speed Single Block Mode Operation
BA200 Series Version available
- **AAV11-DA**
2 Channels 300 kHz D/A DMA Interfaces
12 Bit, 4 Bit Digital Control Line
BA200 Series Version available
- **ADQ32**
32 Channel 200kHz A/D DMA Interface
12 Bit Progr. Gain 1, 2, 4, 8
On board real time clock.
Block mode DMA , buffer chaining.
BA200 Series Version available

MICRO-Bus Analog I/O Options:

- **ADF01-AB**
16 Channel 300kHz A/D Converter with alternate Buffer DMA via DRQ11-CA 12 Bit, Onboard Control Table
High Speed Data Measurement for gapless Data Acquisition
- **AAF01-A 16 Channel 300kHz D/A Converter with alternate Buffer DMA via DRX11-CA 12 Bit**
High Speed Analog Output for Experimental Control
- **AMF01-A 48 Channel MUX Extension for ADF01-AB**
- **ASF01-A 16 Channel Simultaneous Sample and Hold utilized for ADF01-AB and AAF01-A**



Third Party Subsystems:

- **Analog from IDAC , Phoenix Data , Preston.**
- **CAMAC from DSP Technology and Kinetic Systems.**
- **Software from Signal Technology (ILS) , Structural Dynamics Research.**