

```

EEEEEEEEEE XX XX AAAAAA MM MM PPPPPPPP LL EEEEEEEEEE SSSSSSSS
EEEEEEEEEE XX XX AAAAAA MM MM PPPPPPPP LL EEEEEEEEEE SSSSSSSS
EEEEEEEEEE XX XX AAAAAA MM MM PPPPPPPP LL EEEEEEEEEE SSSSSSSS
EE XX XX AA AA MMMM MMMM PP PP LL EE SS
EE XX XX AA AA MMMM MMMM PP PP LL EE SS
EE XX XX AA AA MMMM MMMM PP PP LL EE SS
EE XX XX AA AA MM MM MM PP PP LL EE SS
EE XX XX AA AA MM MM MM PP PP LL EE SS
EE XX XX AA AA MM MM MM PP PP LL EE SS
EEEEEEEEEE XX XX AA AA MM MM PPPPPPPP LL EEEEEEEEEE SSSSSSSS
EEEEEEEEEE XX XX AA AA MM MM PPPPPPPP LL EEEEEEEEEE SSSSSSSS
EEEEEEEEEE XX XX AA AA MM MM PPPPPPPP LL EEEEEEEEEE SSSSSSSS
EE XX XX AAAAAAAAAA MM MM PP LL EE SS
EE XX XX AAAAAAAAAA MM MM PP LL EE SS
EE XX XX AAAAAAAAAA MM MM PP LL EE SS
EE XX XX AA AA MM MM PP LL EE SS
EE XX XX AA AA MM MM PP LL EE SS
EE XX XX AA AA MM MM PP LL EE SS
EEEEEEEEEE XX XX AA AA MM MM PP LLLLLLLLLL EEEEEEEEEE SSSSSSSS
EEEEEEEEEE XX XX AA AA MM MM PP LLLLLLLLLL EEEEEEEEEE SSSSSSSS
EEEEEEEEEE XX XX AA AA MM MM PP LLLLLLLLLL EEEEEEEEEE SSSSSSSS

```

```

LL      AAAAAA  BBBB8888  CCCCCCCC  HH      HH  NN      NN  DDDDDDDD  EEEEEEEEEE  FFFFFFFFFF
LL      AAAAAA  BBBB8888  CCCCCCCC  HH      HH  NN      NN  DDDDDDDD  EEEEEEEEEE  FFFFFFFFFF
LL      AA      AA  BB      BB  CC      CC  HH      HH  NN      NN  DD      DD  EE      FF
LL      AA      AA  BB      BB  CC      CC  HH      HH  NN      NN  DD      DD  EE      FF
LL      AA      AA  BB      BB  CC      CC  HH      HH  NN      NN  DD      DD  EE      FF
LL      AA      AA  BB      BB  CC      CC  HH      HH  NN      NN  DD      DD  EE      FF
LL      AA      AA  BBBB8888  CCCCCCCC  HH      HH  NN      NN  DD      DD  EEEEEEEE  FFFFFFFF
LL      AA      AA  BBBB8888  CCCCCCCC  HH      HH  NN      NN  DD      DD  EEEEEEEE  FFFFFFFF
LL      AAAAAAAAAA  BB      BB  CC      CC  HH      HH  NN      NN  DD      DD  EE      FF
LL      AAAAAAAAAA  BB      BB  CC      CC  HH      HH  NN      NN  DD      DD  EE      FF
LL      AA      AA  BB      BB  CC      CC  HH      HH  NN      NN  DD      DD  EE      FF
LL      AA      AA  BB      BB  CC      CC  HH      HH  NN      NN  DD      DD  EE      FF
LLLLLLLLLLL  AA      AA  BBBB8888  CCCCCCCC  HH      HH  NN      NN  DDDDDDDD  EEEEEEEEEE  FF
LLLLLLLLLLL  AA      AA  BBBB8888  CCCCCCCC  HH      HH  NN      NN  DDDDDDDD  EEEEEEEEEE  FF

```

```

FFFFFFFFFF  000000  RRRRRRRR
FFFFFFFFFF  000000  RRRRRRRR
FF          00      00  RR      RR
FF          00      00  RR      RR
FF          00      00  RR      RR
FFFFFFFFFF  00      00  RRRRRRRR
FFFFFFFFFF  00      00  RRRRRRRR
FF          00      00  RR  RR
FF          00      00  RR  RR
FF          00      00  RR  RR
FF          00      00  RR  RR
FF          00      00  RR  RR
FF          000000  RR      RR
FF          000000  RR      RR

```

File: LABCHNDEF.FOR  
Version 'V04-000'

```

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```

Implicit Integer (A-Z)

!AD CHANNEL STATUS BLOCK defined the parameters associated  
with each A/D channel

For each A/D channel:

- 1) Status of the channel (ACTIVE or INACTIVE)
- 2) PID of the connected process allocated the channel
- 3) Tics/sample (time between sample in tics)
- 4) Buffer size in words
- 5) Buffer count (0 if no limit)
- 6) Buffers acquired
- 7) Index to the last full buffer containing valid data  
0 => No buffer available
- 8) Number of data points in the last full buffer

The following elements are used by the data acquisition interrupt service  
routine. In general, they will not be used by an application process.

- 9) Index to the current data acquisition buffer
- 10) Number of data points in the current data acquisition buffer
- 11) Number of tics until the next sample
- 12) Offset to the next data point to be acquired (wrst buffer #1)  
(NOTE: Offset = Index - 1)

```

Parameter      MAX_AD_CHANNEL = 16      !Maximum number of channels
Parameter      MAX_BUF_SIZE = 512      !Maximum buffer size
Parameter      INACTIVE = 1      !Status values for AD_BLOCK

```

```
Parameter      ACTIVE = 2          !
Integer*4      AD_BLOCK(MAX_AD_CHANNEL,16)
```

```
! Data buffers
```

```
Parameter      BUFFER_COUNT = 2      ! Number of buffers/channel
Integer*2 DATA_BUFFER(MAX_BUF_SIZE,BUFFER_COUNT,MAX_AD_CHANNEL)
```

```
! This module defines the common data structures
! for the privileged LABIO processes.
```

```
! CONNECT BLOCK used to identify processes currently
! connected to the LABIO process.
```

```
! For each process CONNECT_BLOCK contains:
```

```
Process ID (PID)
Internal VMS I/O channel of the connected processes mailbox

Parameter      MAX_PID = 16          !Maximum number of processes
Integer*4      CONNECT_BLOCK(MAX_PID,2)
```

```
! DATA COMMON SECTION
```

```
! This will be mapped as a global data section
```

```
Common /LABIO_SECTION/ AD_BLOCK, DATA_BUFFER, CONNECT_BLOCK
Common /LABIO_SECTION/ LABIO_BUFFER_E !Last element of DATA section
Equivalence (AD_BLOCK,LABIO_BUFFER_ST) !First element of DATA section
Integer*4 SECTION(2),SECTION_SIZE
```

```
! Define Global Event Flag Cluster names and numbers
```

```
! EF_NOTIFY_CLUSTER is used to notify the priveleged LABIO process
! that change of status has occurred, i.e. channel has
! become ACTIVE or INACTIVE, or a buffer has been freed.
! Flags 0-15 of the cluster correspond to CHANNELS 1-16
! Flags 16-31 are not used.
```

```
Parameter EF_NOTIFY_CLSTR = 'LABIO_EF_NOTIFY'
! First flag of notify
```

```

      Parameter EF_NOTIFY_1 = 64
! Offset to Notify
      Parameter EF_NOTIFY_OFF = 63
! Event Flag EF_DATA_ACQ is set when LABIO_DATA_ACQ has completed initialization
      Parameter EF_DATA_ACQ = EF_NOTIFY_T+17
! Event Flag EF_CONNECT is set when LABIO_CONNECT has completed initialization
      Parameter EF_CONNECT = EF_NOTIFY_T+18

! EF_STATUS is used to notify a applications process
! that a buffer is available, and used by an application
! process to inicate the status (ACTIVE or INACTIVE) of
! a channel.

! Flags 0-15 of the cluster are the ACTIVITY flags
! if set (by the application process), the corresponding
! channel(1-16) is active. If clear, the channel is inactive.
! When a change of state is made the corresponding flag must
! also be set in Cluster EF_NOTIFY_CLUSTER.

! Flags 16-31 are the buffer status flags, when set,
! a buffer for the corresponding channel (1-16) is available.
! The application process mus clear the flag and set the corresponding
! flag in EF_NOTIFY_CLUSTER when it is finished with the buffer.

      Parameter EF_STATUS_CLSTR = 'LABIO_EF_STATUS'
! First event flag in Activity and Status
      Parameter EF_ACTIVITY_1 = 96
      Parameter EF_STATUS_1 = EF_ACTIVITY_1 + 16
! Offset to Activity and Status
      Parameter EF_ACTIVITY_OFF = 95
      Parameter EF_STATUS_OFF = EF_ACTIVITY_OFF + 16

! BIT array, BIT(I) = has bit I set ( I = 1 to 32 )

      Integer*4 BIT(32)
      Data BIT/ '1'x,'2'x,'4'x,'8'x,'10'x,'20'x,'40'x,'80'x,
1             '100'x,'200'x,'400'x,'800'x,'1000'x,'2000'x,
1             '4000'x,'8000'x,'10000'x,'20000'x,'40000'x,
1             '80000'x,'100000'x,'200000'x,'400000'x,
1             '800000'x,'1000000'x,'2000000'x,'4000000'x,
1             '8000000'x,'10000000'x,'20000000'x,'40000000'x,
1             '80000000'x/

![[End of File]

```

XALINK  
MAR

LABIOLINK  
COM

DRMASTER  
FOR

LPATEST  
FOR

LABTOPEAK  
FOR

LABIOSTR  
COM

XMESSAGE  
MAR

XATEST  
FOR

LABTOCOM  
FOR

LABDEMO  
COM

LABMBXDEF  
FOR

LABTOSAMP  
FOR

MAILCOMPRESS  
COM

LABCHNDEF  
FOR

CONNECT  
COM

LABTOCON  
FOR

LABDEMO  
FOR

PEAK  
FOR

DRCOPYBLD  
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XIDRIVER  
MAR

LABTOSEC  
FOR

DRSLAVE  
FOR

LABTOACQ  
FOR

LABTOCOMP  
COM

LABIOSTAT  
FOR

TESTLABIO  
FOR