

```

EEEEEEEEEE XX XX AAAAAA MM MM PPPPPPPP LL EEEEEEEEE SSSSSSSS
EEEEEEEEEE XX XX AAAAAA MM MM PPPPPPPP LL EEEEEEEEE SSSSSSSS
EEEEEEEEEE XX XX AAAAAA MM MM PPPPPPPP LL EEEEEEEEE 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
EEEEEEEE XX XX AA AA MM MM PPPPPPPP LL EEEEEEEEE SSSSSSS
EEEEEEEE XX XX AA AA MM MM PPPPPPPP LL EEEEEEEEE SSSSSSS
EEEEEEEE XX XX AA AA MM MM PPPPPPPP LL EEEEEEEEE SSSSSSS
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 EEEEEEEEE SSSSSSSS
EEEEEEEEEE XX XX AA AA MM MM PP LLLLLLLLLL EEEEEEEEE SSSSSSSS
EEEEEEEEEE XX XX AA AA MM MM PP LLLLLLLLLL EEEEEEEEE SSSSSSSS

```

```

LL      AAAAAA  BBBB BBBB  CCCCCCCC  HH      HH  NN      NN  DDDDDDDD  EEEEEEEEE  FFFFFFFFF
LL      AAAAAA  BBBB BBBB  CCCCCCCC  HH      HH  NN      NN  DDDDDDDD  EEEEEEEEE  FFFFFFFFF
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  BBBB BBBB  CC      CC  HHHHHHHHHH  NN  NN  NN  DD      DD  EEEEEEE  FFFFFFF
LL      AA      AA  BBBB BBBB  CC      CC  HHHHHHHHHH  NN  NN  NN  DD      DD  EEEEEEE  FFFFFFF
LL      AAAAAAAAAA  BB      BB  CC      CC  HH      HH  NN      NN  NN      NN  DD      DD  EE      FF
LL      AAAAAAAAAA  BB      BB  CC      CC  HH      HH  NN      NN  NN      NN  DD      DD  EE      FF
LL      AA      AA  BB      BB  CC      CC  HH      HH  NN      NN  NN      NN  DD      DD  EE      FF
LL      AA      AA  BB      BB  CC      CC  HH      HH  NN      NN  NN      NN  DD      DD  EE      FF
LLLLLLLLLL  AA      AA  BBBB BBBB  CCCCCCCC  HH      HH  NN      NN  DDDDDDDD  EEEEEEEEE  FF
LLLLLLLLLL  AA      AA  BBBB BBBB  CCCCCCCC  HH      HH  NN      NN  DDDDDDDD  EEEEEEEEE  FF

```

```

FFFFFFFFF  00000  RRRRRRR
FFFFFFFFF  00000  RRRRRRR
FF          00    00  RR      RR
FF          00    00  RR      RR
FF          00    00  RR      RR
FFFFFFFFF  00    00  RRRRRRR
FFFFFFFFF  00    00  RRRRRRR
FF          00    00  RR  RR
FF          00    00  RR  RR
FF          00    00  RR      RR
FF          00    00  RR      RR
FF          00000  RR      RR
FF          00000  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_S) ! 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 privileged 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
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XATEST
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LABTOCOM
FOR

LABDEMO
COM

LABMBXDEF
FOR

LABIOSAMP
FOR

MAILCOMPRESS
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LABIOSTAT
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TESTLABIO
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