

# BLM Data Structures and General Information

The BLM data is handled by the current BPM Processor board via the EDB (External Device Bus).

The EDB is an 8-bit address, 8-bit data bus designed by C. Wegner.

Almost all BLM data logging is linked to the BPM data being logged. Almost all BPM data is tied to TeV Clock events.

The BLMs have an internal integrator with a 63 mS time constant. So virtually all BLM data is logged as the most recent reading. By this I imply that if a “Flash” event happens, I copy the most recent BLM snap shot frame into the flash frame, etc. The only time I read data from the BLM is when I am doing a BPM snap shot. These BPM snap shots typically happen every 2 to 8 mS.

## The BLM uses EDB addresses E0H-FFH

E0H = Status Read

Status Bit 0 = Abort

Status Bit 1 = Alarm

Status Bit 2 = HV Bad Over

Status Bit 3 = HV Bad Under

Status Bit 4 = +15V Bad

Status Bit 5 = -15V Bad

Status Bit 6 = 5V Bad

Status Bit 7 = ADC Not running

E0H = Clear status bits write

E1H = Status Mask Rd/Wr

E2H = Alarm/Abort Mask Low Byte Rd/Wr

E3H = Alarm/Abort Mask High Byte Rd/Wr

E4H = Alarm Level Set Low Field

E5H = Alarm Level Set High Field

E6H = Abort Level Set Low Field

E7H = Abort Level Set High Field

E9H-ECH not used

EDH = High/Low Field select (Bit 0)

EEH = MADC Channel select

EFH = High Voltage Setting

F0H-FBH = 12 Channels of BLM readings

FCH = ADC reading of Vref (1 lsb = 78.125 mV)

FDH = ADC reading of +15V (1 lsb = 117.2 mV)

FEH = ADC reading of -15V (1 lsb = -117.2 mV)

FFH = ADC reading of HV (1 lsb = 13.02 V)

# BLM Data Structures

Each BLM data entry has 16 bytes defined as follows:

12 bytes containing the 12 Loss Monitor's data

## 1 Status Byte

- Status Bit 0 = Abort
- Status Bit 1 = Alarm
- Status Bit 2 = High Field
- Status Bit 3 = HV Bad Over/Under
- Status Bit 4 = +15V Bad
- Status Bit 5 = -15V Bad
- Status Bit 6 = 5V Bad
- Status Bit 7 = ADC Not running

Note: Bit 3 is "OR" of status 2 and 3, then bit 2 is replaced by Field

3 bytes of time stamp where 1 LSB = 1 mS

## Different BLM Data Types:

### BLM Snapshot Buffer (512x16)

Written at time of BPM Snapshot, circular buffer

### BLM Profile Buffer (128x16)

Written at time of BPM Profile clock event, linear buffer

### BLM Alarm Frame

Written when ever the BLM Alarm bit is set

### BLM Flash Frame (15x16)

Written at time of BPM Flash clock event, linear buffer

### BLM Display Frame-BPM linked

Written at time of BPM Display clock event

### BLM Display Frame-BLM only

Written at time of BLM Display clock event

The only time I read data from the BLM is when I am doing a BPM snap shot. These BPM snap shots typically happen every 2 to 8 mS.

## Other Functions:

There are built-in test functions for the BLM

These include a test of the HV supply for the BLMs  
And an ADC/Continuity test which checks out the  
BLM detectors as well as the ADCs etc. These tests  
require timing events measured in  $\frac{1}{4}$  sec and  $\frac{1}{15}$   
sec.

NOTE: The EDB is also used to support the TIM  
(Test Interface Module) for the BPM system. If the  
TIM remains the EDB will have to support it as well.  
The TIM is used to test the BPM functionality by  
injecting RF into the front-ends.