LHC Beam Loss Monitor Threshold Comparator

Design Considerations:

Logging

Post Mortem

Logging: General

Each BLMTC card handles 16 detectors (Ionisation Chambers).

From each of these cards two basic sets of information have to be transmitted for the logging purposes:

- **The *Threshold* & *Warning* table. (~ 10 KBytes)**
- **The measured/calculated data. (< 2 KBytes)**

  The used *Th* & *W* values. (< 2 KBytes)

Logging: The *Threshold* & *Warning* table

This table holds the threshold and warning data needed for the comparison with the measured values.

They are detector specific (i.e. each card will hold different data)

- **~ 10 KBytes**
- **their values are not foreseen to change often, thus**
- **it is not read on regular intervals, only when flagged.**

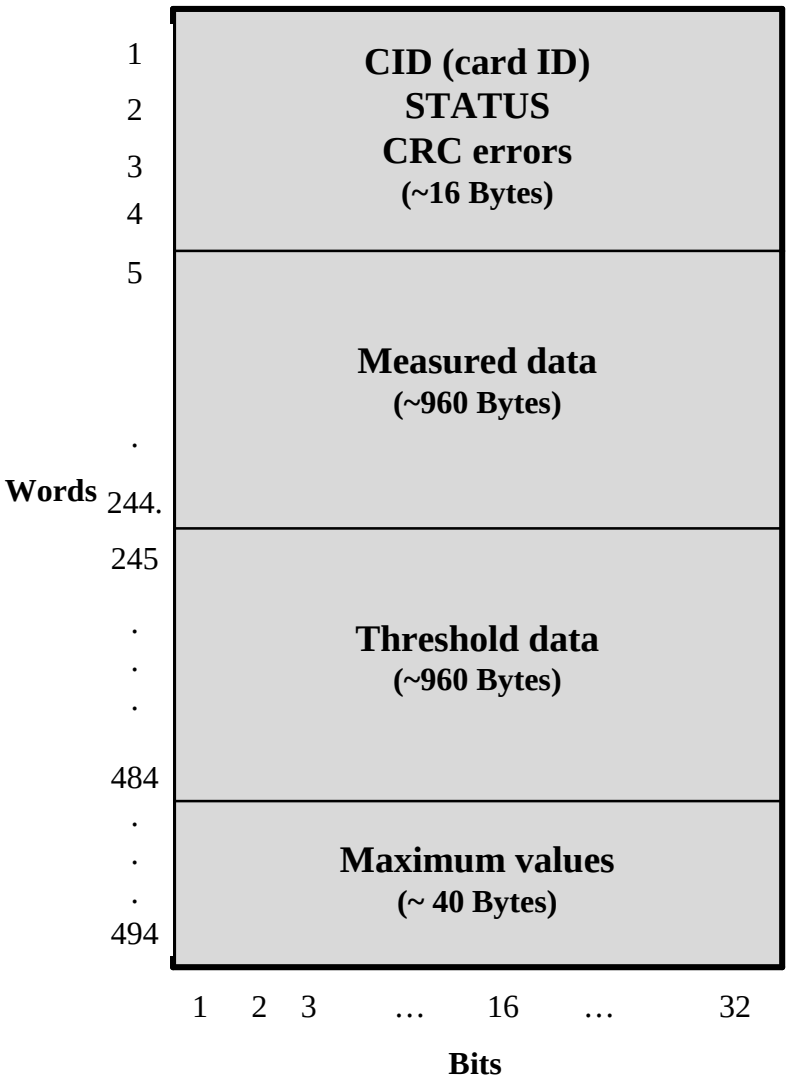
Logging: Calculated data & used *Th* & *W* values

These data have to be read with a rate of a second
in order to be stored in a database as well as
give a graphical representation for the control room.

The information needed to be stored and displayed include the:

- **CID (card ID)**
- **Status bits**
- **CRC errors**
- **Calculated data (integrals)**
- **Threshold values choices of each integral**
- **Maximum values of the last second.**

Logging: Calculated data & used *Th* & *W* values (cont.)



- 1976 Bytes/card updated every second
- Read enable flag for CPU
- 18 cards/crate

Post Mortem

- **Two circular buffers**
  - A. **2000 turns of both signals received**
  - B. **Integrals of 10 ms**

- **Double the above system and toggle between them using the stop PM recording trigger**
  - ➔ **Never stop recording (i.e. avoid start input)**
  - ➔ **Test of PM will be possible anytime**
  - ➔ **Accidental/error-triggering proof**

- **Calculations:**

  2000 turns * ~200 bits frame

  => ~ 50 KB/signal * 2 signals/card = 100 KB /card

  => 100KB/card * 18 cards/crate = 1.75 MB /crate