

The TDR data format

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Abstract

This document gives a brief review of the TDR data format, both for calibration and data output.

1 Calibration

The Calibration data output is driven by a parameter passed to the ReadCalibration command.

The bit decoding of this parameter is:

0	get pedestals
1	get flags
2	get low thresholds
3	get raw sigma
4	get high thresholds
5	get gain calibration

The standard value used at the moment is 0x0f.

The Output is made of 16 bit words and the format is:

- | |
|---|
| <ol style="list-style-type: none">1. command parameter, used to describe the content2. if requested, the 1024 words of the pedestals3. if requested, the 1024 words of the flags4. if requested, the 1024 words of low thresholds5. if requested, the 1024 words of raw sigma6. if requested, the 1024 words of the high thresholds7. if requested, the 1024 words of the gain calibration8. the subdetector code version number9. low_threshold_parameter (i.e. the parameter to recover the sigma value)10. high_threshold_parameter (i.e. the parameter to recover the sigma value)11. raw_sigma_parameter (i.e. the parameter to recover the raw sigma)12. calibration event counter (should be at 5120).13. calibration status word. |
|---|

Pedestal are in units of 1/8 ADC count.

Raw Sigma values are in units of 1/8 ADC count, times the raw_sigma_parameter

Sigma are in units of ADC counts, times the low_threshold_parameter.

Flags decoding is:

0	dead from Raw Sigma
1	noisy from Raw Sigma
2	dead from Sigma
3	noisy from Sigma
4	Not gaussian

WARNING the flags decoding is temporary and will be modified.

The calibration status word is interpreted as follows:

- | |
|--|
| <ol style="list-style-type: none">0 calibration finished1 internal trigger is on2 error in step 13 error in step 24 error in step 35 error in step 46 internal trigger mode: an external trigger happened7 internal trigger mode: no event received |
|--|

If a ReadCalibration command is sent while a calibration is not yet finished, the reply is composed of the two following 16 bits words:

- | | |
|----|----------------------------|
| 1. | calibration event counter. |
| 2. | calibration status word. |

2 Data

The Physics data can be of three kinds: Raw, Compressed and Mixed. Mixed data are the sequential combination of the Raw and Compressed kinds. Hereafter the Mixed kind is described, the other two kinds can be obtained simply by not considering either the Raw or the Compressed part.

The data are written in 16 bits words as sketched in the table:

0.	length of the TDR data (L)
1 - 1024	Raw Data (if present)
1025	Cluster length -1 (LC)
1026	Cluster first strip (0-1023)
....	(LC+1) ADC values of the strips (short int 1= 1/8 ADC)
(L-16)	the 16 values of the CN
....	(WARNING this words are present only on debug runs)
(L-1)	
(L)	The Status word

The Raw Data are presented in units of 1/8 ADC count, the order of the channels reflect the 3 ADCs readout order.

- 1st ADC (S1) channels 0-319
- 2nd ADC (S2) channels 320-639
- 3th ADC (K) channels 640-1024

the order of Raw Data is: S1(0),S2(0),K(0),S1(1),S2(1),K(1), ...

Note that also the strip signal and common noise values in the compressed output are expressed in units of 1/8 ADC count, and are signed values.