Naming scheme for ALICE trigger classes, v. 0.1 (draft)

1. Introduction

The aim of this document is to define a naming scheme for trigger classes in ALICE. For a definition of the terminology (inputs, descriptors, classes, clusters, etc…) please refer to the Trigger/DAQ/HLT/CS TDR [1].

2. General scheme

A trigger class is defined by the following elements:

- a *descriptor*: a logical function of the trigger inputs

- a *bunch crossing mask*, defining for which bunch crossings in the orbit the trigger is activated

- a *past-future protection scheme*, defining which conditions are imposed on the presence of triggers in the bunch crossings preceding and following the trigger bunch crossing

- a *detector cluster,* defining which detectors are to be read-out

- a *rare* flag: special time intervals are reserved exclusively for classes flagged as rare

In the present scheme, the information on these elements is explicitly encoded in the class name. The generic name of the class is formed as follows:

C<descriptor code>-<bunch crossing mask code>-<past-future protection code>-<detector cluster code>-<rare flag, if needed>

e.g.: C0SH1-B-NOPF-ALL-R describes a class with descriptor D0SH1, bunch crossing mask code B, past-future protection code NOPF, cluster ALL and rare flag.

The list of descriptor, bunch crossing mask, past-future protection and detector cluster codes ("List of ALICE trigger class codes") is maintained by the trigger menu task force. It is updated by the addition of new codes as needed. Elimination/reuse of old codes is not foreseen at the moment. The list has a version number formed as follows: yy-mm-dd-vv, such as: 08-06-30-00. The last two digits vv are foreseen in case more than one version is created the same day.

3. Descriptor Code and Input Code

Each descriptor is defined by its expression as a logical function of the input codes. The list of descriptor codes is therefore supplemented with a list of trigger input codes. Input codes have the following form:

n<3-char code>

where n indicates the trigger input level (0, 1 or 2) and the 3-char code identifies the specific input. The second character (first character of the 3-char code) identifies the detector from which the trigger input originates.

e.g.: 0SH1 indicates Level 0 input "SPD high multiplicity, 1st threshold"; all 3-char codes starting with S indicate trigger inputs from the SPD

Descriptor codes start with the letter D and have a minimum length of 5 characters. No maximum length is defined.

e.g.: DVBAND (the descriptor corresponding to the logical AND of the V0A and V0C signals)

In case of descriptors defined by a single trigger input, the descriptor code consists of the letter D followed by the trigger input code.

e.g.: D0SH1 indicates the descriptor corresponding to the single input 0SH1

Use of digits for the second character is reserved for such descriptors.

4. Bunch Crossing Mask Code

The bunch crossing mask defines for which bunch crossings (out of the 3564 in the orbit) the specific trigger class is enabled. The complete definition of the mask consists of a sequence of 3564 bits. For the purpose of offline use, however, the bunch crossings can be subdivided into a limited series of categories for which the action will be similar. Each category is indicated by a letter. The bunch crossing mask code consists of the string of all the letters corresponding to the categories of bunch crossings for which the trigger class is active, in alphabetical order.

e.g.: in C0SH1-B-NOPF-ALL-R, the bunch crossing mask code B indicates the trigger class is active for bunch crossings of class B (two filled bunches crossing); in C0SH1-AC-NOPF-ALL-R the bunch crossing mask code AC indicates the trigger class is active for bunch crossings of classes A (filled bunch from side A but empty bunch from side C) and C (filled bunch from side C but empty bunch from side A).

5. Past-Future Protection Code

Describes the type of past-future protection scheme activated for the specific trigger class.

e.g.: in C0SH1-B-NOPF-ALL-R the past-future protection code NOPF indicate the absence of past-future protection conditions for this trigger class

6. Detector Cluster Code

Indicates the cluster of detectors which are read out in correspondence of the trigger class.

e.g.: in C0SH1-B-NOPF-ALL-R the detector cluster code ALL indicates that all the ALICE detectors are read out.

7. Rare Flag

The presence of the flag R at the end of the class name indicates that the trigger class belongs to the "rare" category.

References

[1] ALICE Technical Design Report of the Trigger, Data Acquisition, High-Level Trigger and Control System, CERN-LHCC-2003-062, ALICE TDR 10