Common Trigger Proposal. Heavy Ion beam test. September 2002

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1 Introduction

The objective of the present document is the definition for a common trigger between miniRICH prototype and miniTracker prototype DAQ to be installed at CERN SPS heavy ion beam in September 2002.

The main idea is to have both systems completely independent, in such a way that they could run independently. When running together a common event number generator will be used.

2 Hardware Description

The hardware needed is relatively simple: some combinatorial logic gates and a modified CAMAC scaler. In figure 1 is sketched the schematics of the hardwre needed.

A trigger signal is combined with the BusyT signal to synchronize with the Tracker DAQ. If Tracker is down, switching off this signal, allows RICH to run independently. A copy of this coincidence is sent to the Tracker, to allow Tracker run independently. This line will be switched off during common runs.

The trigger signal validated by BusyT will enter the CAMAC RICH crate where will be validated by the BusyR. This signal will generate the Trigger on RICH crate and a copy of it will be sent to the Tracker. Another copy will go to the CAMAC scaler that will increment the Event Number.

Besides this easy synchronization Tracker also plan to take date (for calibration purposes) during the interspill periods. To do that a coincidence between interspill and a generator of some tenths of Hertz will be sent to the Tracker trigger signal LV1 generator (a simply OR between Trigger, Trigger validated by RICH and Interspill). This signal will not increment the scaler.

The scaler will be modified by University of Geneva in order to obtain a copy of the event number that will be sent to the Tracker DAQ crate placed in the experimental area. RICH should access this event number just reading two 16-bit CAMAC registers. Tracker will read the content of this registers via a cable and truncated to 24 least significant bits for technical reasons. This module should not be reseted. To avoid that all possible signals (INHIBIT,CLEAR,etc) will be supressed in that module.

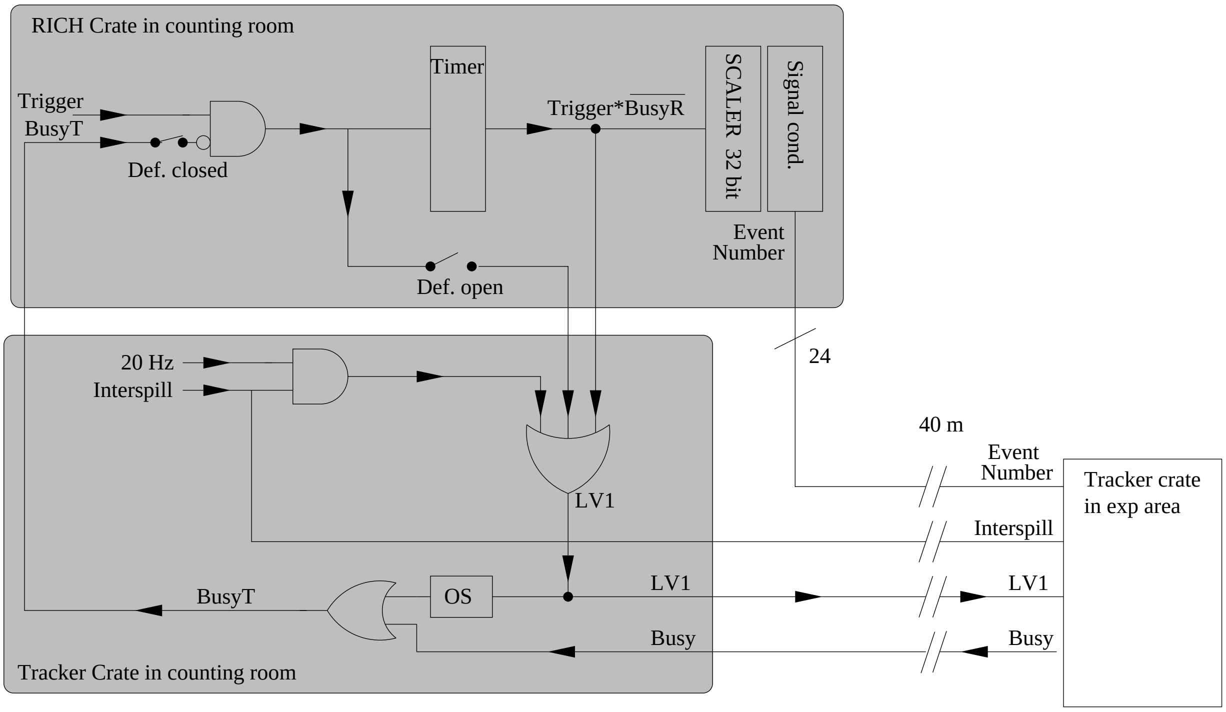

Figure 1: Proposed setup