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Trigger Merging Module for J-PARC E16 Experiment

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An experiment to measure the spectral modification of vector mesons in nuclear medium is planned as the J-PARC E16. It will start at a J-PARC high momentum beam line in FY 2019. The number of total detector channels is 112,996.

The trigger decision is made from 2,620 ch discriminator output signals. The number is too large to handle with one module, therefore we have developed a new trigger merger board.

The trigger system consists of trigger merging modules, a trigger decision module and trigger distributing modules. The trigger merging module is named as TRG-MRG. For trigger decision and trigger distributing modules, the Belle-2 UT3 and Belle-2 FTSW are used, respectively. We have developed a merging module named TRG-MRG.

The TRG-MRG mainly consists of 256ch LVDS receivers, FPGA (Kintex7 160T-2) and 8ch optical transceivers (SFP+). The module detects leading edges of 256ch LVDS signals from discriminators at 500 MHz double data rate and outputs serialized timing data to the Belle-2 UT3 by Aurora 8B/10B protocol.

The detail of development and results of performance test of TRG-MRG will be presented.

Minioral

Yes

Description

Trigger

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Session Classification: Trigger, control and monitoring and tests