## **Trigger Board External Interface**

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## 1. Introduction

The Trigger Board will be a flexible and re-configurable unit.

Although the design allows the inputs and outputs to be re-defined through updated PLD firmware, a definition drawn up from the most likely requirement is used here. To facilitate more than one unit in a system, each input has a corrosponding output (with a PLD in the middle) to allow daisy-chaining or a master-slave configuration. In addition, a second trigger input is provided, and a delayed version of the trigger can be output.

A subset of the signals is also available for distribution to other stand-alone components using 40 LVDS outputs.

Name	Туре	No.	Pins	Description
ClkIn	NIM	1	1	Read-out system master clock (12.5MHz)*
ClkOut	NIM	1	1	
TrigIn	NIM	1	1	Trigger to start read-out cycle*
TrigOut	NIM	1	1	
Trig2In	NIM	1	1	Additional trigger input
DTrigOut	NIM	1	1	Delayed trigger (delay programmable)
ActIn	NIM	1	1	Activity - OR of raw trigger sources
ActOut	NIM	1	1	
BeamOnIn	NIM	1	1	Beam spill in progress (from machine)
BeamOnOut	NIM	1	1	
VetoIn	NIM	1	1	Inhibits triggering, high when busy
VetoOut	NIM	1	1	
AbortIn	NIM	1	1	Cancel trigger-veto - resets read-out cycle*
AbortOut	NIM	1	1	
CalIn	NIM	1	1	Calibration mode enable
CalOut	NIM	1	1	
Aux1In	NIM	1	1	Spare 1
Aux1Out	NIM	1	1	
Aux2In	NIM	1	1	Spare 2
Aux2Out	NIM	1	1	
LTrigOut	LVDS	32	64	Fan-out of triggers to external devices **
LVetoOut	LVDS	4	8	Veto fan-out **
LClkOut	LVDS	4	8	Clock fan-out **

## 2. Signals

\* These signals can be connected directly to the back-plane, bypassing PLD control.
\*\* 10x4 fan-out - they need not be composed 8-1-1 as shown here.

## 3. Connectors and Cables

All NIM signals will connect via 20 LEMO 00 connectors and on the front panel.

The LVDS fan-out will be via 4 IDC 20-way connectors. The fan-out will effectively be 4 way with all pin 1s connected etc.

It is expected that a twist-and-flat type IDC cable will be used for distribution of these signals.