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DSM/DAPNIA/SPP
Requirements

- Bridge between G-Link from central trackers and standard level2 links (Hot-link).
- Simple card: can work without computer. Reuse standard VTM G-Link receiver.
- Performs protocol conversion.
- Provides monitoring information.
Protocol Conversion

G-Link input

FIC

Hot Link output

Start

Parity

Stop
Monitoring in FIC

● Current status of all links.
  ¨ Ready indicators, FIFO Flags.
  ¨ Input and output states.
  ¨ Error counters, incl. overflow latches.
  ¨ Events counters, incl. overflow latches.

● Occupancy histogram:
  ¨ Only Max occupancy of the four channels.
  ¨ Five bins: 0, 1, 2-3, 4-7, ≥8.
  ¨ Update frequency: 500Hz.
Error detection
Error recovery

- Errors taken into account:
  - Invalid character received from G-Link.
  - Protocol errors on G-Link.
  - Buffer overflow (FIFO full or Event counter overflow).

- Tool for error diagnosis: output parity.

- Error diagnosis and recovery done in software in the Alphas.
Link Debugging Strategy

- Find which link is in default (G-Link or Hot Link).
  - Check intermediate parity.
  - Check error indicators from both links.
- Try to re-initialise the bad link.
- After Hot Link re-initialisation, run BIST to check link quality.
VME Control

- General controls
  - Reset, Test modes.
  - Clear of monitoring counters.
  - Serial communication with VTM.

- Monitoring

- Debugging
  - Full and independent control of both links
## VME Interface

<table>
<thead>
<tr>
<th>Addr</th>
<th>Description</th>
<th>Field 1</th>
<th>Field 2</th>
<th>Field 3</th>
<th>Field 4</th>
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<tbody>
<tr>
<td>ad 00</td>
<td>CTL</td>
<td>Serial</td>
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<td>WFx</td>
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<td>unused</td>
<td>Flags</td>
<td>FSM</td>
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<td>FIFOx</td>
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<td></td>
<td>FIFO1</td>
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</table>
Demonstrator and Test Bench

- Development under way. Already usable for the FIC prototype.
- Software written in LabWindow. Style foreseen for easy portage to D0 on-line environment.
- Designed to check functionality and correctness. Not suitable for performance measurements.