8 Channel Gigabit Ethernet Based Controller
(8 ch. GEBC) Board

PRODUCT DESCRIPTION

The 8 Channel Gigabit Ethernet Controller (8 ch. GEBC) board is an air-cooled board used for sensor data acquisition. The board receives information from sensors over 8 input channels. The sensor signal is conditioned, digitized and the digital samples are sent to the onboard FPGA. The FPGA performs packetisation and sends the data over Ethernet for further processing.

The board performs signal conditioning and data capturing for Sonar application.

KEY FEATURES

- Automatic Gain Control (AGC)
- Manual/Programmable Gain Control (MGC/PGC)
- 256 point FFT engine on FPGA
- Eight channels for sensor data acquisition
- ADC sampling up to 625 ksp at 24-bit
- Onboard signal conditioning
- Three different frequency bands
- Channel synchronisation within the bands with accuracy of < 50ns
- Gigabit Ethernet with Jumbo frame support
- Redundant Gigabit Ethernet interface for data

SPECIFICATIONS

FPGAs
- Xilinx Virtex-5 LX50T FPGA for processing

Interfaces
- Three Gigabit Ethernet interfaces on fascia plate
- JTAG and platform flash interface for FPGA programming
- Two input temperature sensor, 1 UART

Software / IP
- Linux Operating System ported on Virtex-5 FPGA

Additional Information
- Health monitoring and shutdown from host interface
  - Voltage and temperature monitoring
- NOR Flash, DDR2 SDRAM memory
POWER CONSUMPTION

- The unit consumes < 20W
- Input voltage is 3.3V and 5V over VME backplane

ENVIRONMENTAL

- Qualification: Thermal cycling and random vibration
- Temperature range: −10°C and +50°C (Operational)

PART NUMBER(S)

The following variants of this board are available:

<table>
<thead>
<tr>
<th>Part Numbers</th>
<th>Variants</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>CH1010</td>
<td>8 Channel Gigabit Ethernet Based Controller (8 ch. GEBC) board, detailed in the above datasheet</td>
<td>8 input channels&lt;br&gt;Air cooled, 6U form factor, VME board&lt;br&gt;24-bit ADC sampling at 625 kspss</td>
</tr>
<tr>
<td>CH1011</td>
<td>16 Channel Gigabit Ethernet Based Controller (16 ch. GEBC) board, Air cooled</td>
<td>16 input channels&lt;br&gt;Air cooled, 6U form factor, standard VME64 board&lt;br&gt;24-bit ADC sampling at 144 kspss</td>
</tr>
<tr>
<td>CH1012</td>
<td>16 Channel Gigabit Ethernet Based Controller (16 ch. GEBC) board, Conduction cooled</td>
<td>16 input channels&lt;br&gt;Conduction cooled, 6U form factor, standard VME64 board&lt;br&gt;24-bit ADC sampling at 144 kspss</td>
</tr>
</tbody>
</table>