32 Channel Data Acquisition
And Processing System

PRODUCT DESCRIPTION

The 32 Channel Data Acquisition and Processing system is used to acquire narrow band signals from antenna sensors. The signals are digitized on FPGA based data acquisition boards. The digital signals are processed on FPGAs and they are transferred to a processor board for further processing. The system is ruggedized for airborne application.

The system is used in electronic warfare processing system for direction finding application.

KEY FEATURES

- 32-channel, 10-bit ADC input sampling up to 1.5 Gsps
- RF input bandwidth from 1.2 GHz to 2.2 GHz
- Amplitude range from -40dBm to +3.8dBm
- Phase-matched sampling across all channels
  - Phase variation : +/- 7° across 8 channels on each board, < +/-14° across 32 channels on four boards
  - Amplitude variation across all channels less than +/- 2 dB
- Board health monitoring over UART: Voltage and Temperature
- RTL for simultaneous sampling and phase synchronisation of ADCs across boards

SPECIFICATIONS

Hardware Architecture
The forced air conduction cooled system consists of the following boards

- 6U VPX conduction cooled ADC cards for data acquisition
  - On-board Virtex-5 LX330 FPGA
  - ADCs Sampling up to 1500 Msps, 10-bit
  - On-board clock synthesizer and clock distribution
- Single board Computer
- Debug connector card
  - 6U VME board
  - To take out signals from the backplane while debugging
- Power supply card with EMI filters

Interfaces

- 32 SMA connectors
- MIL-DTL-38999
  - UART
  - RS422
  - JTAG
  - Power connector
Software / IP
- MicroBlaze softcore processor on Virtex-5 FPGAs
- RTL for simultaneous sampling and phase synchronisation of ADCs across boards

Expansion Slots
- 4 VPX slots
- 2 VME slots

Additional Information
- ADC SNR and Dynamic range : > 50dBm
- Channel isolation : > 55dBc
- SFDR : > 60dBc
- ENOB : > 8 bits

MECHANICAL
- Forced air conduction cooled chassis
- 6U VME-VPX hybrid backplane
- The system is ruggedised for ground-based as well as Airborne processing
- The system weighs <28 kg

POWER CONSUMPTION
- Input voltage is 28 V DC

ENVIRONMENTAL
- Qualification : JSS 55555
  MIL-STD-461E
- Temperature range : –40°C and +71°C (Storage)
  –40°C and +55°C (Operational)

PART NUMBER(S)

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<th>CS1030</th>
<th>Detailed in datasheet above</th>
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<tr>
<td>CN1031</td>
<td>24-channel data acquisition and processing system with the following hardware architecture</td>
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<tr>
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<td>6U VPX conduction cooled ADC cards for data acquisition</td>
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<td>On-board Virtex-5 SX240T FPGA</td>
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<td></td>
<td>ADCs sampling up to 1500 Msps, 10-bit</td>
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<td>Input bandwidth from 70 MHz to 500 MHz</td>
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<td>Phase variation : +/- 5° within board, &lt; +/-10° across boards</td>
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<td>FPGA based Processor board</td>
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