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RT LOGIC
technology that connects

HIGH-RATE DIGITAL FRONT-END PROCESSOR (DFP-HRX)

OVERVIEW

The RT Logic High-Rate Digital Front-End Processor (DFP-HRX) is a high-performance, reconfigurable hardware module. The DFP-HRX has the flexibility and versatility to implement many standard front-end functions for satellite ground, spacecraft test, and range/flight test applications. The DFP-HRX has a full range of firmware and software personalities for processing telemetry and IRIG. Multiple personalities can be combined on a single DFP-HRX.



APPLICATION

The DFP-HRX provides a modular, programmable platform for high-performance digital processing functions. The PMC is designed for use in PCI, cPCI, and VME systems.

The DFP-HRX has an onboard Field-Programmable Gate Array (FPGA) that provides up to eight million logic gates for the downloaded firmware. In addition, the board has a high-speed Reed-Solomon encoding/decoding Application-Specific Integrated Circuit (ASIC), a Phase-Locked Loop (PLL) clock multiplier, an Analog-To-Digital Converter (ADC), and 512 KB of dual-port memory. The DFP-HRX provides multiple TTL, RS-422, D-ECL, and LVDS signal lines to support a wide variety of signal interfaces and data rates.

RT Logic provides firmware personalities for the DFP-HRX that support telemetry functions, such as frame synchronization and PCM simulation. Other functions include Bit Error Rate Testing (BERT) and IRIG time decoding.

Sample application code and device drivers are available for the DFP-HRX to support customer integration of the module.

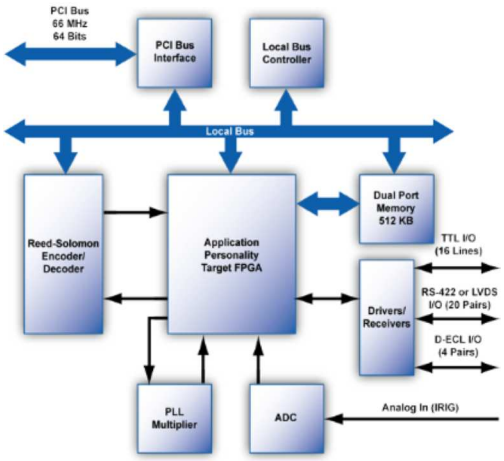
FEATURES

- Telemetry Application Personalities
  - Frame Synchronizer/CCSDS Transfer Frame Processor
  - Viterbi Decoder, Reed-Solomon Encoder/Decoder
  - PCM Simulator/Bit Error Rate Tester
  - IRIG Time Code Processor (IRIG-A, -B, -E, -G)
- Test Code/Device Drivers
- Full Product Documentation/Customer Support

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MULTIPLE APPLICATION FIRMWARE PERSONALITIES

The DFP-HRX provides a configurable platform for hosting one or more of RT Logic's firmware application personalities. For example, the module can be configured to provide a frame synchronizer (up to 450 Mbps) with IRIG time tagging and PCM simulation (up to 700 Mbps). The module can also be configured to provide a CCSDS return-link processor Reed-Solomon multiplier decoding, and transfer frame synchronization.



RT Logic can customize firmware application personalities or develop new ones to meet specific customer requirements.

The DFP-HRX module is part of RT Logic's family of Telemetrix™ Dynamic Digital Processors. This set of PMC modules supports the full spectrum of IF/baseband processing, signal modulation, and digital front-end functions, and offers leading edge digital technology.

SPECIFICATIONS

- I/O Data Rates
  - RS-422: Up To 32 Mbps
  - LVDS: Up To 100 Mbps
  - D-ECL: Up To 700 Mbps
- Inputs/Outputs
  - Up To 16 TTL Lines.
  - Up To 20 RS-422 Pair (40 Lines)
  - Up To 20 LVDS Pair (40 Lines)
  - D-ECL 2 Pair Input, 2 Pair Output
  - IRIG Input (AM Or DC Level Shift)
- Firmware Target
  - Up To 200 MHz Clock Rate
  - Up To 8 M Logic Gates
- PCI Bus Interface
  - 528 Mbps DMA Transfer Rate
  - 66 MHz Clock Rate, 64 Bits Wide
- Other Onboard Circuitry
  - 512 KB Dual-Port Memory
  - PLL Multiplier, Up To 700 MHz
  - ADC For IRIG AM Input
- Application Personality Performance
  - Telemetry: Up To 450 Mbps
  - PCM Simulation: Up To 700 Mbps
  - Commanding: Up To 5 Mbps
- Physical
  - Single Wide PMC Form Factor
  - Short PCI (Via Carrier Board)
- Power (Typical)
  - 2 A @ 5 V, 3 A @ 3.3 V
- Operating Environment
  - 0 ºC To 50 ºC
  - 10 % To 90 % Relative Humidity

Specifications subject to change.
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RTL-DST-DFPHRX V1.2

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