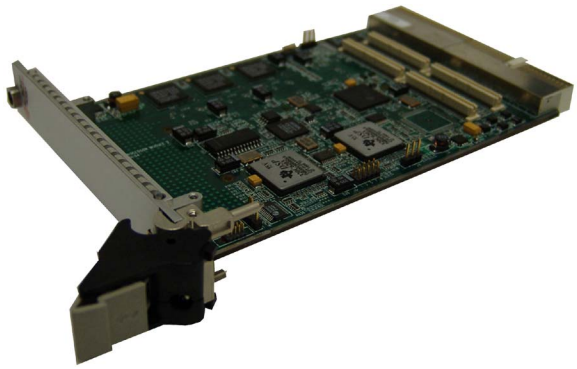
Digital Receiver Technology, Inc.

The One Measure for Wireless Performance



DRT4021- Digital Receiver Unit

Receive Signal Processing for Software Defined Radio

FEATURES

- Two High-Performance Fixed-Point Digital Signal Processors (DSP)
- 24 Multi-Standard Digital Down Converter Processor channels
- Inputs four 14-bit, wideband digital IF data streams from CompactPCI backplane, at 56 to 70 MHz
- Supports a high-speed serial interface to a PMC mezzanine card
- Configurable IF Switch allows routing of all four wideband digital IF streams up to a PMC mezzanine card, simultaneously routing the four paths to the Digital Down Converters
- Supports routing of two of the four digital IF paths from the CompactPCI backplane to a PMC mezzanine, while simultaneously routing two digital IF paths from the PMC card to the Digital Down Converters
- Compact PCI (Rev 2.1) compliant interface with a built-in PCI bridge to a PMC mezzanine card
- Supports flexible boot modes, 1Mx16 onboard FLASH memory or boot over PCI Bus
- Onboard temperature measurement and built-in test capability

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Rev. 2.2

DESCRIPTION

The DRT4021, a member of the DRT4001 Software Defined Radio (SDR) family, processes wideband digital IF signals, producing narrowband IF data streams for further processing and demodulation. The 4021 occupies one 3U-size CompactPCI slot and has the capability to accept one PMC mezzanine card.

The 4021 can receive up to four channels of wideband digital IF data from the cPCI backplane and independently tune/process up to 24 narrowband IF channels using digital down converter processors. The module can also send all four wideband IF data streams up to the PMC mezzanine board. In addition, the PMC module can use two of the four available buses to supply the 4021 with two wideband digital IF data streams.

The maximum bandwidth the 4021 can process in any one narrowband channel is dependent on the sample rate selected and the configuration of the Digital Receivers. With a 70-MHz IF sample rate, the 4021 can process 24 narrowband channels at 2.188 MSps each. If a wider bandwidth is required, the 4021 can be configured to process two channels at 4.375 MSps each (70-MHz IF sample rate).

Control of the 4021 is accomplished over the PCI bus. The control processor has a built-in PCI bus interface that will support full 33-MHz, 32-bit PCI bus transfers. In addition, the 4021 contains a PCI bridge that allows the PMC mezzanine module to communicate over the PCI bus at 33 MHz, 32-bits.

Normally the 4021 will provide demodulated user data and other information through an onboard SCbus interface chip to a system wide TDM SCbus. The 4021 generates all required non-standard voltages needed. Only the standard CompactPCI voltages are needed at the backplane connectors. Various power-down modes can be implemented depending on the application and requirements.

SPECIFICATIONS

Input

- Four independent 14-bit wideband digital IF buses from CompactPCI connector. Supports clock speeds of 56 MHz to 70 MHz.
- 32-bit, 33-MHz PCI bus (standard CompactPCI)
- Two 14-bit wideband digital IF buses from the PMC mezzanine connectors, depending on the internal configuration.
- Synchronization control (CompactPCI or PMC connectors)
- JTAG test/emulator port, RS-232 serial test port

Output

- Two dedicated 14-bit wideband digital IF buses to the PMC connectors. Supports clock speeds of 56 MHz to 70 MHz.
- Two additional 14-bit wideband digital IF buses to the PMC connectors, depending on the internal configuration.
- Extension of 32-bit, 33-MHz PCI interface to PMC connector through a bridge chip
- One full-duplex bidirectional serial bus to the PMC connector. Supports clock speeds of up to 70 MHz.
- Eight channels of SCbus to CompactPCI and PMC connectors
- Synchronization control relay (from CompactPCI to PMC connector)
- General purpose test outputs (up to 8 bits)

Physical

- **Operating Temperature Range** 0 to +50°C (+32 to +122°F)
- **Size** Single-slot 3U CompactPCI (100mm X160mm/39.3" X 62.9")
- **Weight** ~200g without PMC module
- **Power Consumption** 4.6 to 10.2 watts without PMC module*
  (* application dependent)

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