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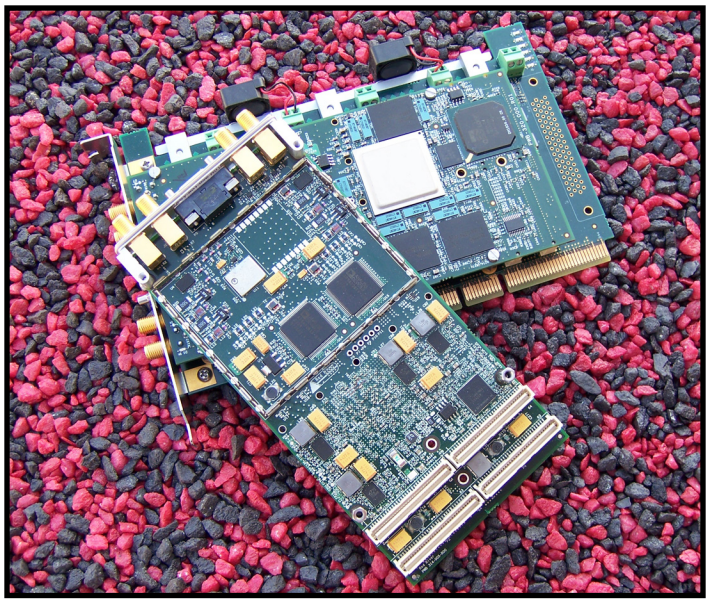
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Find the *Red Rapids 234 (RX4 14/125)* at our website: *Click HERE*

Red Rapids

Signal Stream

Model 230 - 237



- **Available in PMC/PCI/cPCI form factors**
- **Multiple ADC/DAC configurations**
- **30 MHz to 3 GHz sample clock frequency**
- **AC and DC coupled analog interfaces**
- **Continuous, snapshot, periodic modes**
- **Selectable real or complex data formats**
- **Optional SRAM snapshot buffers**
- **On-board fixed frequency synthesizer**
- **Time tagged signal acquisition data**
- **PCI-X (133 MHz) and legacy PCI support**
- **Bus master with scatter-gather DMA**
- **Windows, Linux, VxWorks drivers & API**

Signal Acquisition and Generation

The *Signal Stream* product family performs general purpose signal acquisition and generation for a broad range of applications (scientific, medical, industrial, communications). The hardware incorporates a rich set of software programmable features that include selectable operating modes (continuous, snapshot, or periodic), external or timed event triggers, time tagged data samples, and a choice of real or complex output format.

The continuous mode of operation is used to stream data samples from the ADC to host memory, or from host memory to the DAC. In this case, the PCI bus must be able to sustain data transfers at the composite rate of all active channels.

Snapshot mode is a special case of the continuous operating mode. The key difference is that the signal acquisition or generation will automatically halt after a specified number of samples.

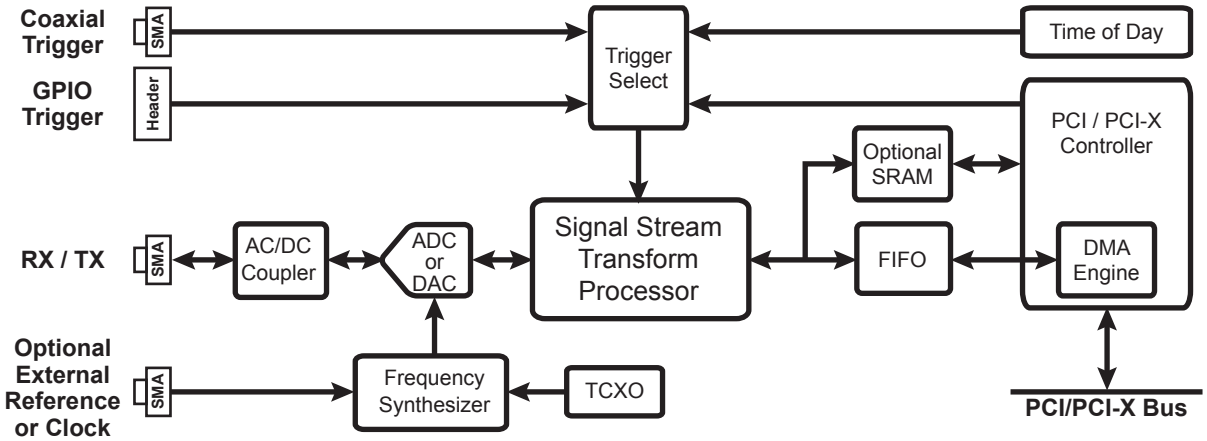
Periodic mode is a special case of the snapshot operating mode. The snapshot is simply repeated on a periodic interval defined by an external trigger or the on-board clock.

The *Signal Stream* datapath is configured as a receiver for ADC channels and a transmitter for DAC channels. The same signal conditioning functions can be applied by the transform processor in either direction.

The datapath includes a FIFO that can store 64 ksamples per channel. Capacity can be increased with optional SRAM to create snapshot buffers for additional high-speed data storage that is independent of PCI bus traffic.

The *Signal Stream* products are available in several different ADC/DAC configurations as listed on the back of this datasheet. Most offer the option for either AC or DC coupled analog interfaces.

The ADC/DAC sample clock is supplied by either an on-board frequency synthesizer or an external source. The frequency



Signal Stream Receive (ADC) or Transmit (DAC) Channel

Red Rapids

Signal Stream

Model 230 - 237

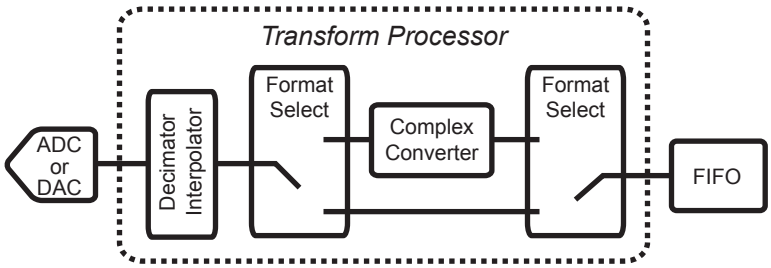
synthesizer can be phase locked to the local 10 MHz TCXO or an external reference can be used to achieve system-wide phase coherence.

A coaxial trigger input is provided to synchronize data collection to an external timing strobe. This input can also be used to provide a 1 PPS signal to the on-board time of day clock. An additional header provides separate triggers for each channel. The trigger source used by the transform processor is software selectable.

The PCI controller implements either conventional PCI or high speed PCI-X protocol for host communication. A DMA engine manages data transfers between the PCI controller and host memory. The DMA engine allows the transceiver to automatically initiate a PCI burst transaction when data needs to be transferred. An interrupt is generated when the specified number of data blocks have been exchanged.

There are also more sophisticated DMA features built into the PCI controller. DMA chaining and scatter-gather techniques are supported by both the hardware and software to optimize data transfer efficiency.

Software templates are provided with the hardware to quickly establish a link with end-user application code. The API is supported with drivers for Windows™, Linux, or VxWorks operating systems.



Signal Stream Transform Processor Datapath

Typical Applications

- **General purpose signal acquisition/generation**
- **Medical equipment instrumentation**
- **Signal collection**
- **Software defined radio**
- **Radar pulse receiver/transmitter**
- **Signal recorder and playback**

▲ Model 230 (RX2 12/213)

Dual 12-bit (213 MHz) ADC

▲ Model 231 (RX2 16/130)

Dual 16-bit (130 MHz) ADC

▲ Model 232 (XCVR2 16/130)

Dual 16-bit (130 MHz) ADC
Dual 16-bit (130 MHz) DAC

▲ Model 233 (RX2 14/400)

Dual 14-bit (400 MHz) ADC

▲ Model 234 (RX4 14/125)

Quad 14-bit (125 MHz) ADC

▲ Model 235 (XCVR2 14/400)

Dual 14-bit (400 MHz) ADC
Dual 16-bit (400 MHz) DAC

▲ Model 236 (RX2 8/1500)

Dual 8-bit (1.5 GHz) ADC

▲ Hardware

Form factor: PMC, PCI, or cPCI
PCI/PCI-X bus: 3.3 V (133 MHz max)
Optional external reference or sample clock
Global trigger input (50 ohms)
Individual trigger inputs: LVTTL

▲ Software

Fedora Linux kernel 2.4 or 2.6
Windows 2000, XP, or Server
VxWorks 6.5 (CHAMP IV default target)

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SLK-230-001-R01

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