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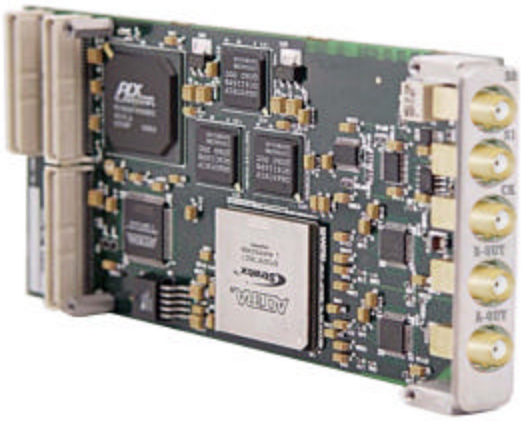
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Find the *Mercury Computer Systems / Echotek ECTR-GC314-PMC* at our website: *Click HERE*

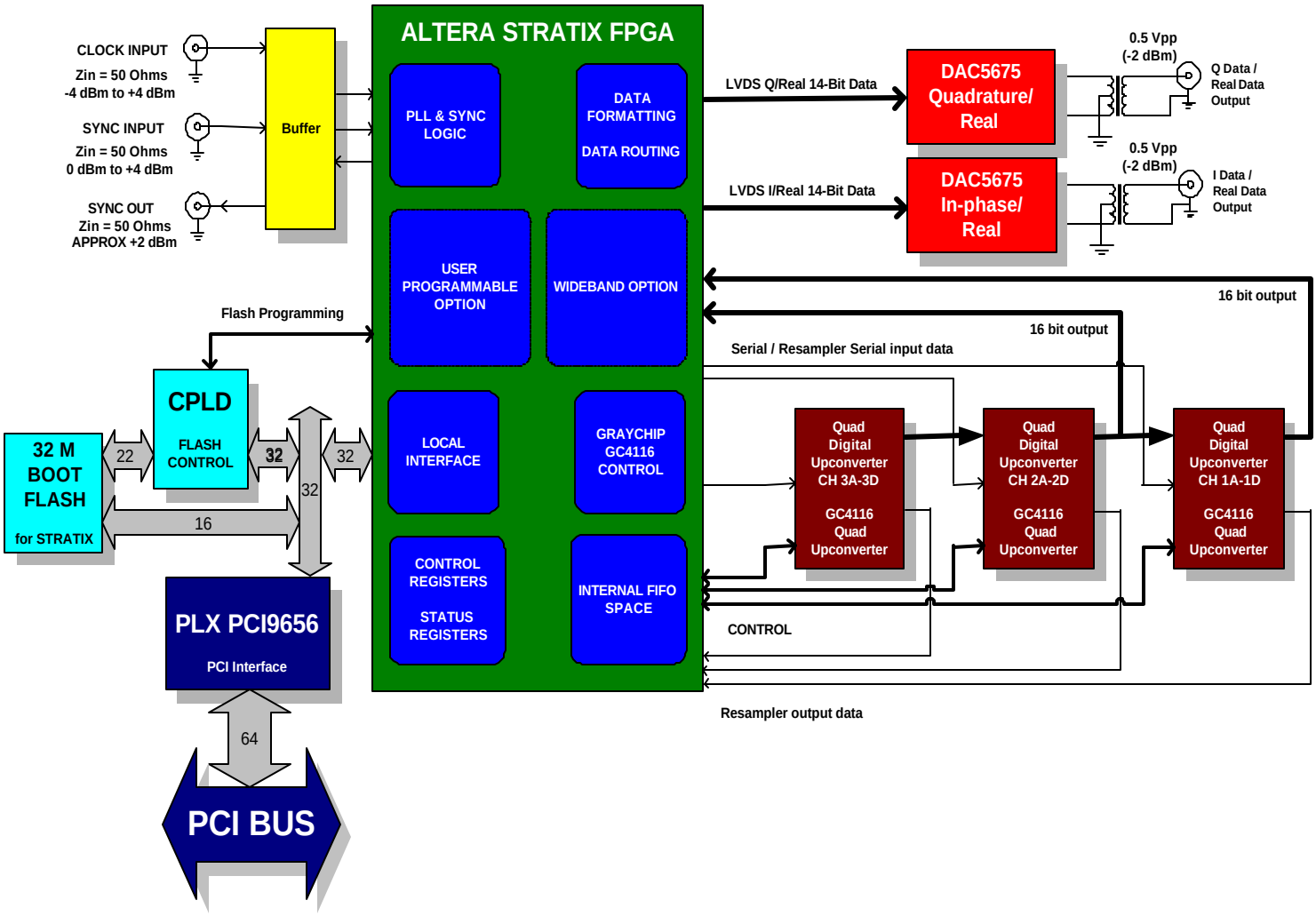
TWELVE CHANNEL DIGITAL TRANSMITTER - PMC MODULE

ECTR-GC314-PMC



FEATURES

* SINGLE SLOT PMC MODULE
* ONE COMPLEX OUTPUT CHANNEL OR TWO REAL CHANNELS
* UP TO TWELVE COMBINED NARROWBAND CHANNELS
* TWO 14 BIT, 400 MSPS D/A CONVERTERS
* MULTI-CARD SYNCHRONIZATION CONTROL
* TIME-BASED START OF TRANSMISSION
* CUSTOM WIDEBAND VERSION AVAILABLE



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ECTR-GC314-PMC
FUNCTIONAL DESCRIPTION

The ECTR-GC314-PMC is a narrowband/wideband digital transmitter module. Using a combination of the latest ASIC transmitter chips, as well as I.P. implemented FPGA's, this module is able to provide a very flexible multi-channel narrowband, or wideband, digital upconverter with excellent dynamic performance characteristics. This product was also designed to support narrow and wide bandwidth frequency upconversion applications where channel-to-channel synchronization is required.

The ECTR-GC314-PMC module consists of the following hardware elements:

1. PCI Interface – The PCI interface uses the PLX 9656 from PLX technology. It can operate at 64 bits, 66 MHz; 32 bits, 64 MHz; 64 bits, 33 MHz; and 32 bits, 32 MHz.

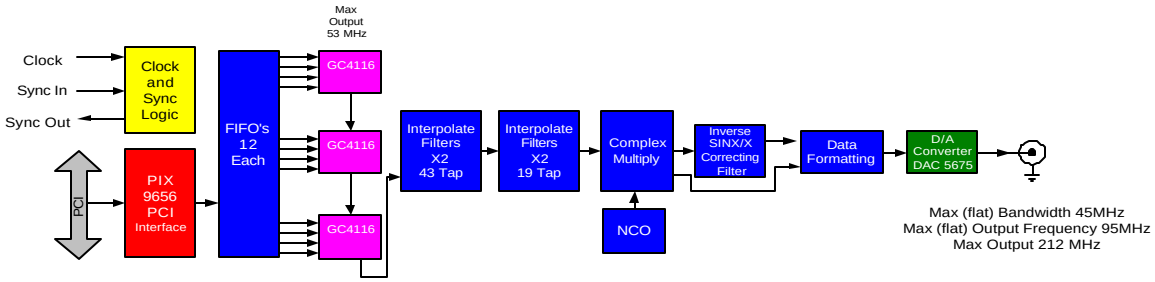
2. Quad Upconverter ASIC's – Three TI (formerly Graychip) GC4116 Quad upconverter chips are installed on the board. These four channel chips can interpolate a complex data input stream, from 32 to 5792, and upconvert to a user selected frequency. The output of these chips may be summed together to provide up to twelve channels in the combined output data stream.

3. Altera Stratix FPGA – This FPGA (IS30) is used to implement input data FIFO buffers, provide post GC4116 frequency upconversion, interpolation filters, inverse sinx/x function, and data formatting; based upon the operational configuration.

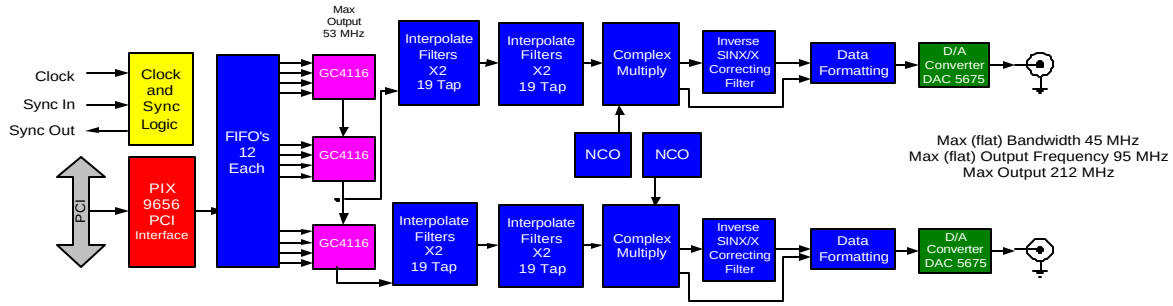
4. Two D/A Converters – The board has two, Texas Instruments DAC 5675, 14-bit, 400 MSPS D/A converter chips providing the final analog output via SMA connector.

The ECTR-GC314-PMC may operate in one of several modes based on the user-selected configuration that is loaded from on board FLASH memory. Current and planned modes are briefly described here:

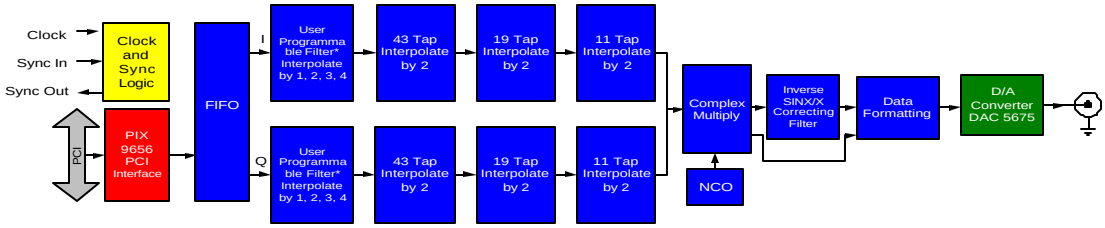
The ECTR-GC314-PMC **Single Channel Narrowband Version** provides a single, real output. Up to twelve channels of narrowband data can be stored in up to twelve independently controlled sample FIFOs, and serialized to the digital up-converters (GC4116s). For this version, the sum output path after the third cascaded digital up-converter (GC4116) is routed into the Stratix FPGA. The path is processed with additional interpolation (a 43-tap Interpolate by 2 Filter and a 19-tap Interpolate by 2 Filter), complex-multiplied with user-programmable Numerically Controlled Oscillators (NCOs), and optionally subjected to an 11-tap inverse sin(x)/x Finite Impulse Response (FIR) filter prior to analog conversion.



The ECTR-GC314-PMC **Dual Channel Narrowband Version** provides two real outputs. Like the Single Channel Narrowband Version, up to twelve channels of narrowband data can be stored in up to twelve independently controlled sample FIFOs, and serialized to the digital up-converters (GC4116s). For this version, however, the sum output path after the second cascaded digital up-converter (GC4116) and the sum output path after the third cascaded digital up-converter (GC4116) are both routed back into the Stratix FPGA. Each path is processed with additional interpolation (two, 19-tap Interpolate by 2 Filters), complex-multiplied with user-programmable Numerically Controlled Oscillators (NCOs), and optionally subjected to an 11-tap inverse sin(x)/x Finite Impulse Response (FIR) filter prior to analog conversion.



The ECTR-GC314-PMC **Wideband Version** provides both in-phase and quadrature outputs. For this version, the digital up-converters (GC4116s) are bypassed. Instead of serializing samples for the GC4116s, the parallel data from the in-phase and quadrature sample FIFO are directly processed with additional interpolation (a User Programmable Interpolate by 1, 2, 3, or 4, a 43-tap Interpolate by 2 Filter, a 19-tap Interpolate by 2 Filter, and an 11-tap Interpolate by 2 Filter), complex-multiplied with user-programmable Numerically Controlled Oscillators (NCOs), and optionally subjected to an 11-tap inverse sin(x)/x Finite Impulse Response (FIR) filter prior to analog conversion.



5. Driver Support – Drivers are supplied for vxWorks, WinNT, and Linux Operating Systems.

Ordering Information

Model	Part Number	Ruggedization	Options
ECTR-GC314-PMC	12-0127/CC510A	Commercial	

Ruggedization Levels	Operating Temp (°C)	Storage Temp (°C)	Vibration	Shock	Humidity	Notes
Commercial	0 to +55°C with 300ft./min. airflow	-50 to +85°C	0.002g2/Hz from 10 to 2000Hz random and 2g sinusidal from 5 to 500 Hz	20g peak sawtooth, 11mS duration	Up to 95% RH	Commercial Grade, cooled by blown air, for use in benign environments and software development applications

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