SIGNALWARE Corporation

TMS320C6x "micro-line" MODULE
2/4 Channel Analog Peripheral
ORS-114 (20-65 MHz, 12/14-bit)

DSP Solutions
Texas Instruments
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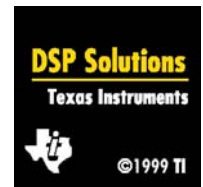
ORS-114 DATA SHEET

The Signalware ORS-114 is a 12/14-bit Analog Peripheral Card with 2 or 4 channels in and out that supports the Texas Instruments micro-line DSP card products built by ORSYS. The Signalware micro-line peripheral cards with ORSYS micro-line DSP CPU cards rapidly construct standalone DSP systems. These cards build inexpensive, production-ready system with minimum time-to-market.

The micro-line stack consists of a base power supply board, analog or digital peripheral cards and a DSP CPU card connected vertically with micro-line stacking connectors. The ORS-114 fits into the micro-line stack as an external analog interface. Multiple ORS-114 cards can be stacked or stacked with other analog interface cards. A wide variety of DSP CPUs and digital interface cards are also available for the micro-line stack.

Alternately, the ORS-114 peripheral card may be mounted on TI DSP Starter Kits (DSKs) using an ORS-900 adaptor card. This provides a convenient and low cost way to build a prototype of the micro-line production-ready system.

The ORS-114 peripheral card has space for two dual A/D converter and two dual D/A converters. These converters are available in 12-bit or 14-bit models. The A/D channels operate simultaneously and independently at up to 65 MS/s. The D/A channels operate up to 125 MS/s on each channel. Beside converters, the standard ORS-114 includes micro-line stack connectors, voltage reference, analog and digital power conditioning, programmable logic interface (FPGA), 4I/4O digital signal lines, 50-pin input connector and a 26-pin output connector, and passive input/output networks that provide filters and AC or DC coupling. Additional options include input transformers, on-board oscillator, expanded FPGA capability, and a 16/32-bit auxiliary DSP interface. The ORS-114 comes with an FPGA logic configuration for the micro-line bus interface and test software for the DSP to exercise the peripheral card.

For medium to large production, micro-line DSP systems cards are priced to compare favorably with custom single board solutions. The ORS-114 has production applications in high end imaging equipment, IF sampling in communications and software radios. Test equipment, instrumentation, custom DSP applications and research projects also make ideal uses for micro-line DSP systems.
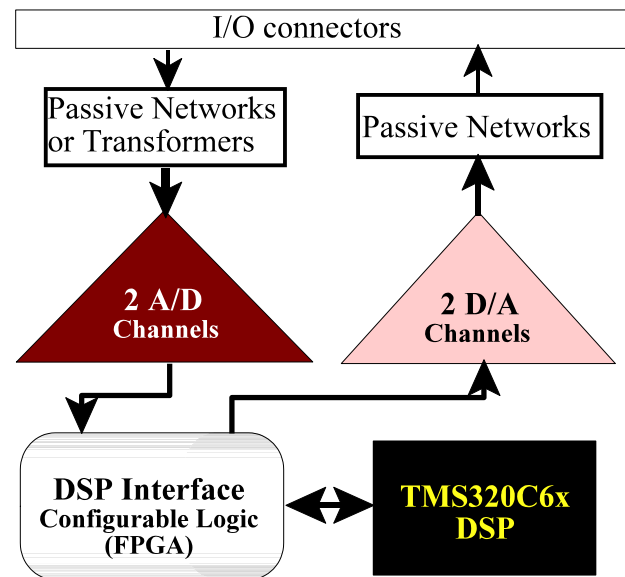
Configurable interface fits many applications

Configurable I/F to DSP Adds Flexibility

The many functions performed by the FPGA allow flexible, customized use of the peripheral card in the DSP system. ORS-112 accommodates either a Xilinx Spartan™ IIE FPGA (rated 50K to 300K logic gates) or Virtex™ II FPGA (rated 250K to 1000K logic gates). Serial flash memory and a JTAG connector provide for FPGA configuration.

The FPGA supports data multiplexing, FIFOs and bus control to allow efficient use of the EMIF bus with appropriate transfer frame sizes. The combination of on-board oscillator or external clock input, selectable clock countdown and FIFOs allow for precise sample rates to meet the application needs asynchronous to DSP clocks.

Although the standard logic configuration provided has many selectable options to meet the needs of most users, custom configuration of the FPGA can meet special needs of applications. Very high speed digital signal pre- or post-processing may be added to the FPGA configuration.

Analog Performance depends Power Quality

High resolution analog converters require high quality DC power to perform at their best. The ORS-114 has isolating converters and regulators to produce the analog 3.3 and 5 V for the A/D and D/A converters. The power converters are synchronized to sample rates of the mixed signal devices.

ORS-114 Specifications

Analog to Digital Conversion:
  1/2 - Analog Devices AD9248 14-bit Converters *
    differential input with passive network
    64/40/20 MS/s depending on device
    72 dB s/n+distortion (SINAD) - estimated
    2.0 volt p-p differential (into 200 ohm) input range
    500 Mhz 3dB bandwidth
Digital to Analog Conversion:
  1/2 - Analog Device AD9767 14-bit Converters *
    +/- 1.0 LSB typical differential non-linearity
    35 ns settling time to +/-0.1% FSR
    Differential current or voltage outputs
Digital Interface to CPU (m-l A, B, BB, C, D, E, X**):**
  Xilinx FPGA - 32-bit micro-line interface or
    16-bit dedicated compact DSP card interface
External Digital Interfaces:
  JTAG - 7 pin FPGA Configuration Interface
  Digital I/O (w/ clock in) - 10-pin dual row 50 mil header
External Analog Interfaces:
  50-pin/26-pin connectors - dual row 2 mm header
Power Interfaces to Base (m-l connectors D and P):
  +5 or +3.3 VDC (digital) - 0.4 Watt

  +12 VDC (analog) - 4.1 Watt
Operating Temperature Range: 0 to 64 deg C ambient
  at board surface with minimum air flow
Size: 123 mm L x 67 mm W x 11 mm H (stacking height)
Net Weight: 0.075 (0.165) kg (lb)

Configuration Information

ORS-114 Analog Peripheral Card with Virtex II
 - 12/14-bit models with 4 A/D channels @ 20/40 MHz
 - 12/14-bit models with 2 A/D channels @ 65 MHz
 - 12/14-bit models with 0, 2 or 4 D/A channels
Selection of models limited in small quantities.

Options:
 - 25 to 50 MHz On-board Oscillator
 - 5.0 or 3.3 volt power supply
 - AC, transformer or DC input coupling
 - Current or voltage outputs
 - Auxiliary Dedicated Compact Interface
 - External Clock Input
 - Custom FPGA Configuration

* Manufactures device specifications, not re-measured on board.
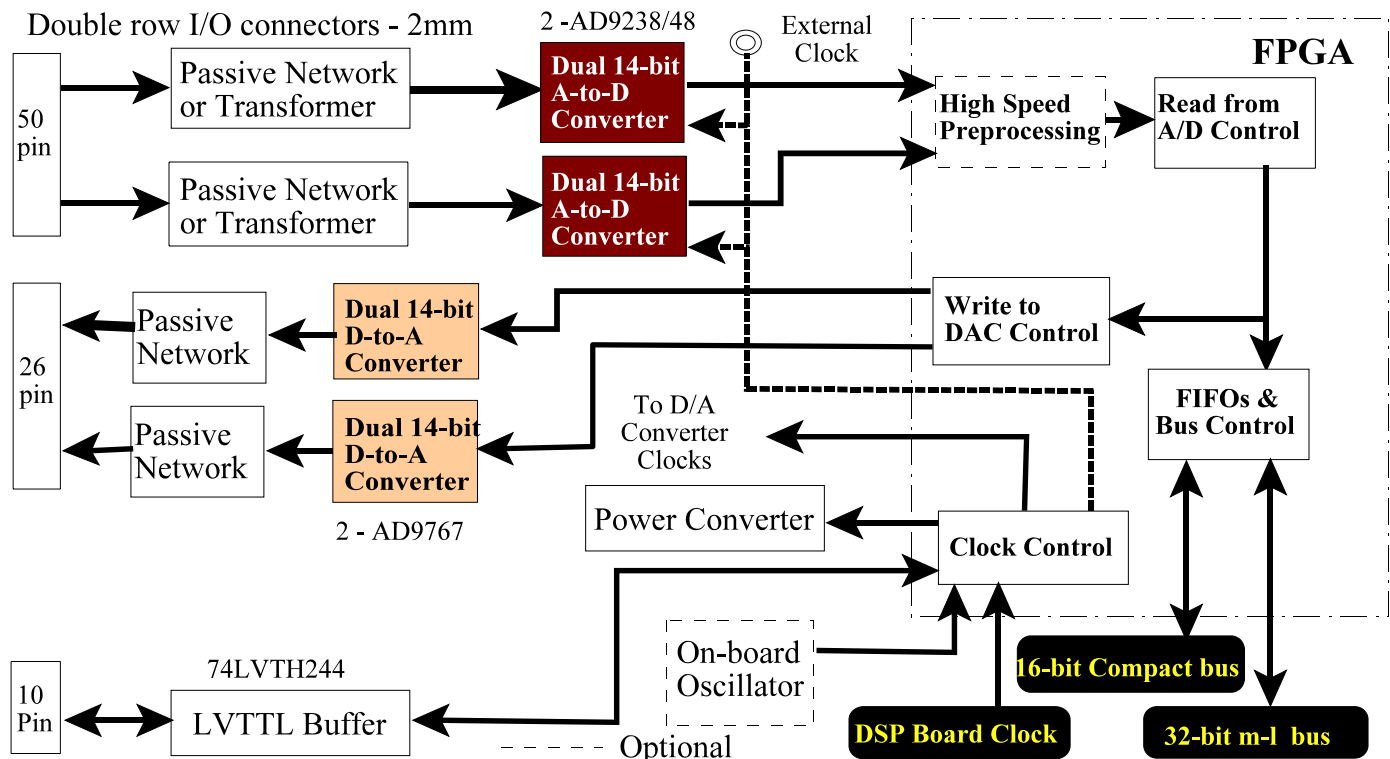
The FPGA provides for a number of interface functions in the peripheral card.

Distributor