

TMS320C6x “micro-line” MODULE 4 Channel Analog Peripheral ORS-112 (2.5/20 MHz, 16/12-bit)



ORS-112 DATA SHEET

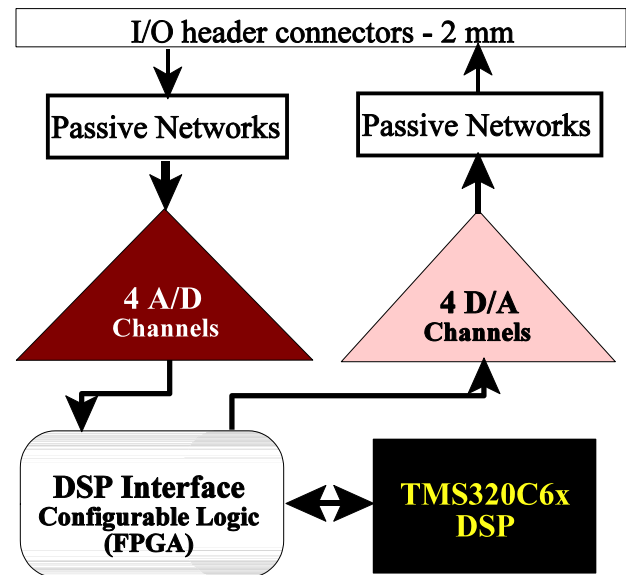
The Signalware ORS-112 is a 12/16-bit Analog Peripheral Card with 4 channels in and out that supports the Texas Instruments micro-line DSP card products built by ORSYS. The Signalware micro-line peripheral cards combine with ORSYS micro-line DSP CPU cards to rapidly construct standalone DSP systems. 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-112 fits into the micro-line stack as an external analog interface. Multiple ORS-112 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-112 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-112 peripheral card has four A/D converters and two 2-channel 16-bit D/A converters; or a total of 4 channels in and 4 channels out. The A/D channels operate simultaneously and independently at up to 20 MS/s (12-bit) or 2.5 MS/s (16-bit). The D/A channels operate up to 625 KS/s with both channels running. Beside converters, the standard ORS-112 includes micro-line stack connectors, voltage reference, analog and digital power conditioning, programmable logic interface (FPGA), 4I/4O digital signal lines, 50-pin input and a 26-pin output analog connector, and passive input/output networks that may include filters and AC or DC coupling. Additional options include on-board oscillator, a variety of FPGA capabilities, and dedicated 16-bit auxiliary DSP interface. The ORS-112 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-112 has production applications in sonar signal analysis, multi-axis positioning systems, and other precision feedback control systems. 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-112 has isolating converter and regulator to produce the analog 5 V for the A/D and D/A converters. The power converters are synchronized to sample rates of the mixed signal devices.

ORS-112 Specifications

Analog to Digital Conversion:

- 4 - Analog Devices AD9260 Data Converters *
 - differential input with passive network
 - 2.5 to 20 MS/s depending on mode
 - built-in 8-1 decimation filter for 16-bit mode
 - 58 to 87.5 dB s/n+distortion (SINAD)
 - +4.0 volt p-p differential (into 200 ohm) input range

Digital to Analog Conversion:

- 2 - Linear Technology LTC26x2 12/16-bit Converters *
 - 2 independent channels each (4 channels)
 - +/- 0.5/1.0 LSB typical differential nonlinearity
 - 10 us settling time to +/- .0015% FSR 16-bit mode
 - 0-4.1 volt (into 2K ohm) output range

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 - 6 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)

* Manufactures device specifications, not re-measured on board.

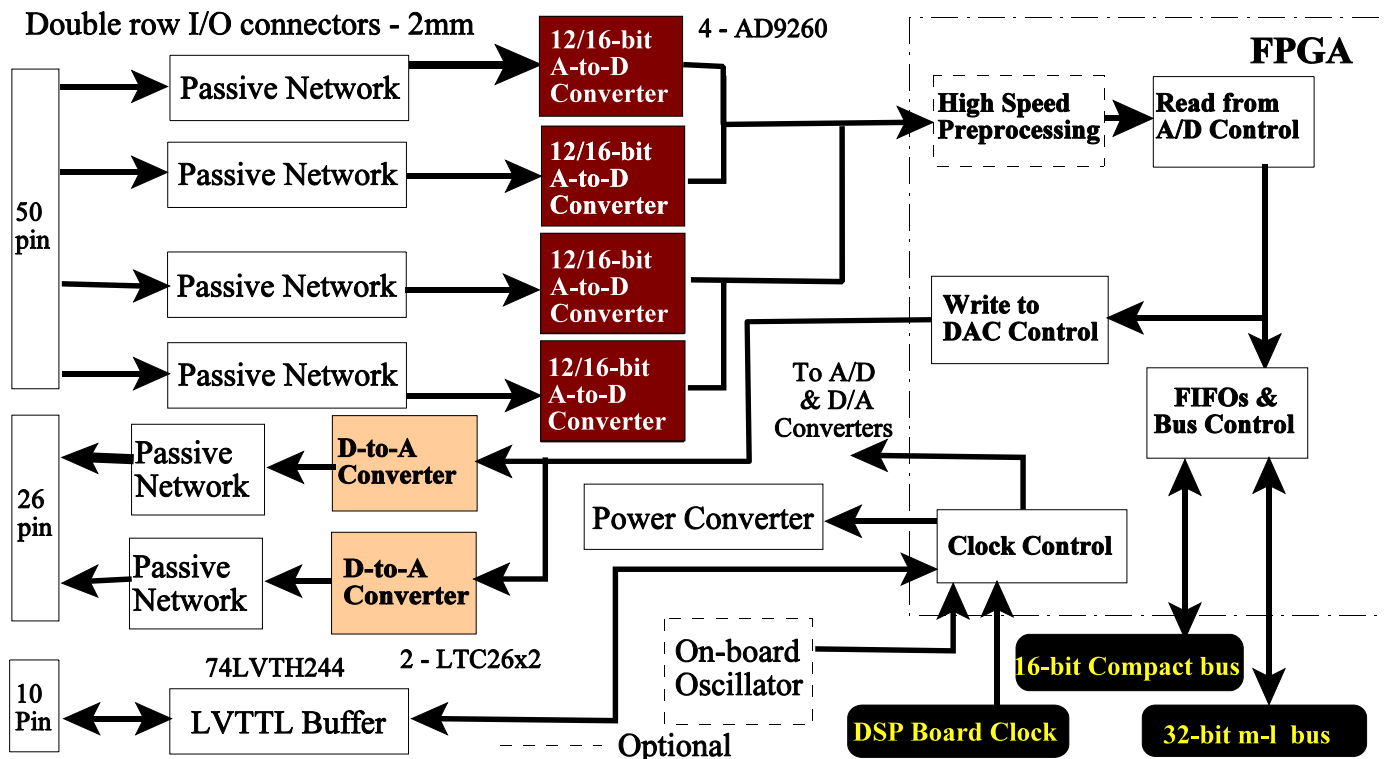
Configuration Information

ORS-112 Analog Peripheral Card

- 16-bit models up to 4 A/D channels @ 2.5 MHz
 - 12-bit models up to 2 A/D channels @ 20 MHz
 - 12-bit and 16-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 or DC input coupling
- Auxiliary Dedicated Compact Interface
- External Clock Input
- Custom FPGA Configuration



The FPGA provides for a number of interface functions in the peripheral card.

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