

## TMS320C6x “micro-line” MODULE 12 Channel Analog Peripheral ORS-116 (250 KHz, 16-bit)



### ORS-116 DATA SHEET

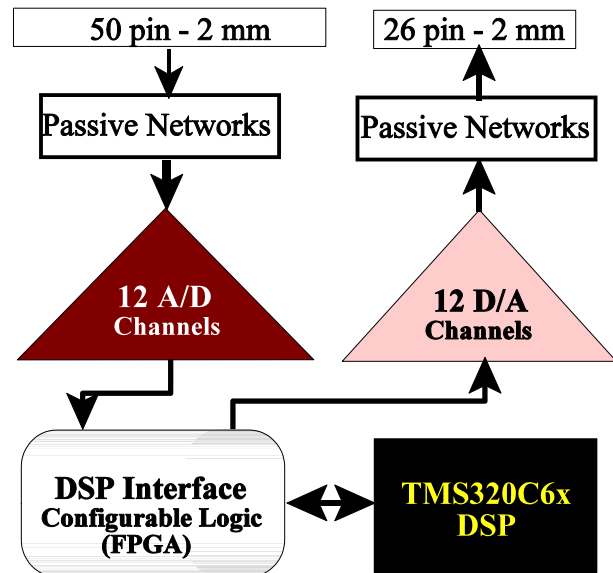
The Signalware ORS-116 is a 16-bit Analog Peripheral Card with 12 channels in and out that supports the Texas Instruments micro-line DSP card products built by ORSYS. The Signalware micro-line peripheral cards combine with the ORSYS micro-line DSP CPU cards to rapidly construct standalone DSP systems. 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-116 fits into the micro-line stack as an external analog interface. Multiple ORS-116 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-116 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-116 peripheral card has two 6-channel, 16-bit A/D converters and three 4-channel, 16-bit D/A converters, for a total of 12 channels in and 12 channels out. These channels operate simultaneously and independently at up to 250 KS/s. Beside the converters, the standard ORS-116 includes the micro-line stack connectors, voltage reference, analog and digital power conditioning, programmable logic interface (FPGA), 4I/4O digital signal lines, a 50-pin analog input and a 26-pin output 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-116 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-116 has production applications in multi-channel data acquisition systems, motor control, multi-axis positioning systems, 3-phase power control, 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-116 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 standard the 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-116 has isolating converter and regulator to produce the analog 5 V for the A/D and D/A converters. The converter is synchronized to the sample rates of the mixed signal devices.

## ORS-116 Specifications

### Analog to Digital Conversion:

- 2 - TI ADS 8364 16-bit Data Converters \*
- 6 independent differential channels each
- 250 KS/s on each channel separately
- 83 dB signal-to-noise ratio typical
- +/- 3 LSB typical non-linearity error
- No missing bits to 14 bits
- 5 volt p-p differential (into 200 ohm) input range

### Digital to Analog Conversion:

- 3 - TI DAC8534 16-bit Data Converters \*

### Power Interfaces (m-l connectors D and P):

- +5 or +3.3 VDC (digital) - 0.4 Watt
- +12 VDC (analog/digital) - 2.1 Watt

### Operating Temperature Range: 0 to 70 deg C

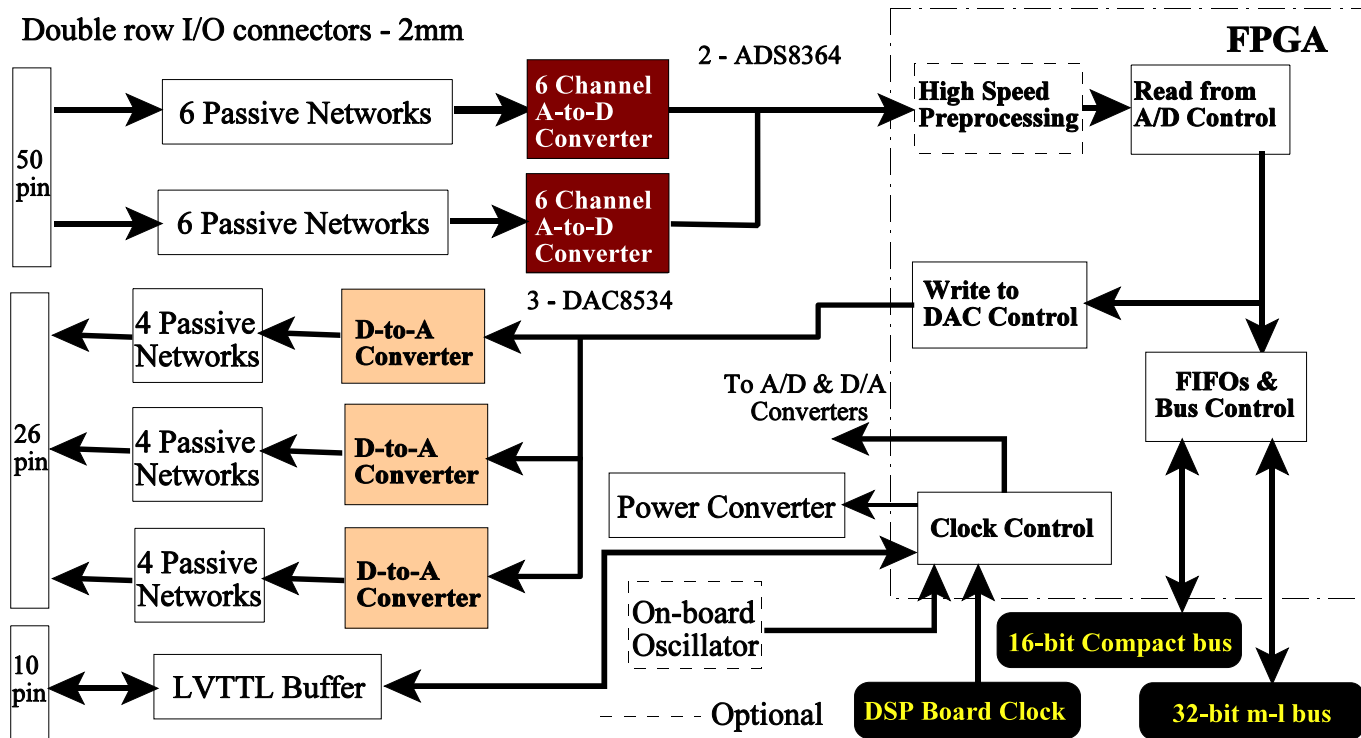
Size: 123 mm L x 67 mm W x 11 mm D (stacking height)

Net Weight: 0.075 (0.165) kg ( lb)

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

## Configuration Information

### ORS-116 Analog Peripheral Card



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

- 4 independent channels each
- +/- 0.25 LSB typical differential nonlinearity
- 10 us settling time to +/- .003% FSR
- 0-4 volt (into 5K ohm) output range

### Digital Interface to CPU (m-l A, B, BB, C, D, E, X):

- Xilinx FPGA - 32-bit micro-line interface bus 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

- 16-bit models with 6 or 12 A/D channels
- 16-bit models with 4, 8, or 12 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

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