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RTG001 – FPGA based data acquisition& processing system

£2,650

- **User programmable Xilinx XC2V1500-6 FPGA. (optionally 3M gates XC2V3000-6 FPGA at £3,400)**
- **2 channels of 210Mhz 12 bit A/D**
- **2 single ended (optionally differential) channels of 160Mhz 16 bit D/A**
- **8 bits digital I/O**
- **Hi Speed (480Mbits/sec) USB 2.0 connection to a host PC**
- **Can be used as a stand alone board for embedded systems.**
- **FPGA can be configured via USB, Xilinx JTAG cable or from on-board PROM**
- **Single 5V power supply required – 20W mains Power Supply Unit included**
- **HUNT ENGINEERING Host API supported for Windows 2000 and XP and Linux – FPGA and DSP loading, resetting and data exchange all performed with simple to use software interface.**
- **Optional expansion via HERON module slot – see www.hunt-dsp.com for options**

The RTG001 is a self contained programmable data acquisition and processing system. It can be used stand alone or connected to a PC via the USB 2.0 connection.

The fast A/D and D/A channels are directly connected to the user programmable FPGA, allowing data to be processed by a user FPGA program. The FPGA can be used to perform digital processing between the analogue inputs and outputs, or the data can be passed to and from a PC using the USB 2.0 connection and provided software.

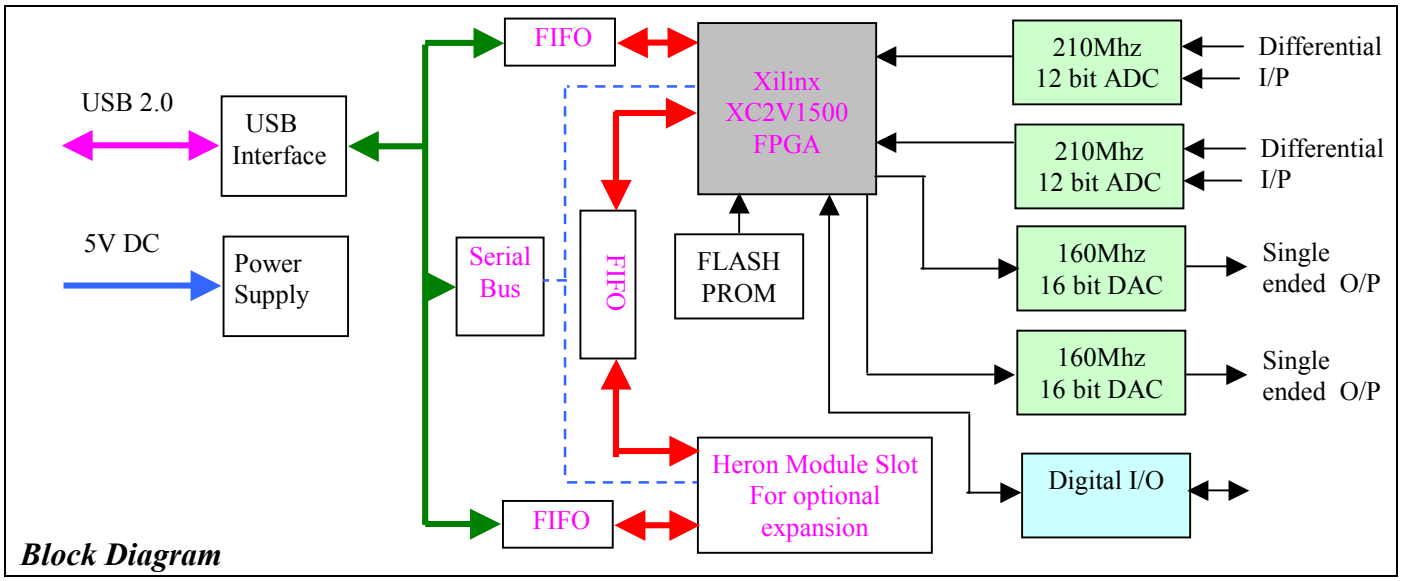
The USB connection is supported via the HUNT ENGINEERING Host-API software. This allows software applications and tools on the Host PC to access the hardware using a consistent software interface without the need to understand or program the hardware or USB directly.

The FPGA program can be loaded over the USB connection using a software tool that directly accepts the output from development tools for the Xilinx FPGA. Alternatively a Xilinx JTAG cable (Parallel or USB) can be used to load the FPGA and or program the on board configuration PROM.

The FIFO connections can be used to stream data to or from a module in the system. They are capable of up to 50Mbytes/second in each direction, but the Host PC, its USB controller and the operating system will all impose their own limits to this speed.

The system is delivered ready to go with a power supply (requires an IEC lead specific to your country), USB cable, I/O cables and a CD with all of your documentation, software tools and examples. The only other thing you need are development tools for the Xilinx FPGA, for example Xilinx Foundation ISE from www.xilinx.com .

"Find your system solution at www.hunt-rtg.com"



Technical Specification

Analogue I/P

2 differential input channels with common or independent clocking set by jumper

Standard Input characteristics:

+/-0.768mV differential inputs each on 2 MMT co-axial connectors (U.FL if you choose the differential output option

A/C coupled 50R, signal B/W from 200Hz to 450Mhz

Zero input noise typically 3 levels maximum 8 levels

Offset typically +-3 levels maximum +-8 levels

Optional Input types:

D/C

D/C coupled 50R - Signal B/W 0hz to 450Mhz but each input must not exceed the range 0v to +3.3V (of this module). This means a 2.8V DC offset is required.

Zero input noise typically 3 levels maximum 10 levels

Offset typically +-8 levels maximum +-16 levels

Analogue O/P specifications

Standard Output characteristics:

2 single ended channels with independent clocking

+/-0.374V single ended output on MMT co-axial connector

A/C coupled 50R, signal B/W from 725Hz to 200Mhz

Optional Output types:

D/C 50R, signal B/W 0 – 200Mhz

Differential

+/-2.1V differential, on a pair of U.FL co-axial connectors per channel

A/C coupled 50R, signal B/W from 750Hz to 200Mhz

D/C coupled 50R, signal B/W from DC to 145Mhz

FPGA

Xilinx 1.5M gate Virtex-II FPGA, speed grade 6. XC2V1500-6FG676 (optionally Xilinx 3M gate Viretx-II FPGA, speed grade 6, XC2V3000-6FG676, at increased cost)

With no heatsink fitted (standard) the FPGA can dissipate 2.8 Watts at 50deg C ambient temperature.

The power circuits are capable of delivering more than this, so a heatsink may be required for your design.

If that is the case a larger 5V Power Supply Unit may also be necessary

Host Bus

USB 2.0 capable of up to 50Mbytes/second dependent on host PC and USB configuration.

Maximum Dimensions:

160mm x 110mm x 21mm.

Power requirements

5V Max: 3.25A plus the power taken by the FPGA. Typ: 2.5A plus FPGA

The Mains PSU included can supply up to 4A, which is enough to power an FPGA design that is less than the 2.4W bare package maximum dissipation.

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