

# MrDig

FPGA-based DSP platform

## Key Features

MPC8260 family PPC

6 channels of 12 Bit ADCs

6 million gate equivalent Xilinx FPGA

Host or Agent bus mastering 3U CPCI

2 x 10/100MB Ethernet

4 x Serial Ports, RS232/RS422

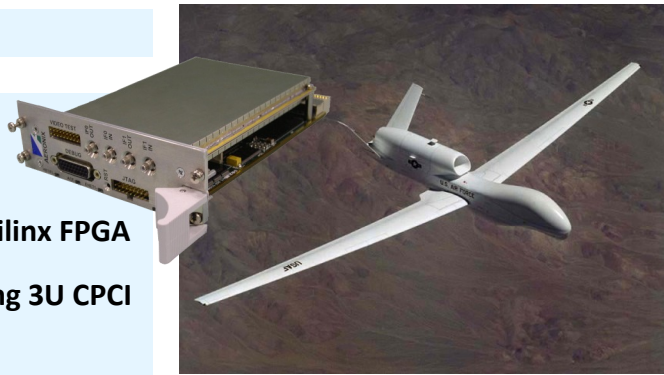
Programmable General Purpose I/O  
Signals

CompactFlash Type II slot

Low Power, < 4 Watts running

Linux and Uboot (bootloader)

IF/RF Mezzanines Available



MrDig is the digital portion of the Modular Integrated Receiver/Digitizer, or MIRDer for short. It is essentially a reprogrammable radio receiver.

MrDig and its companion IF/RF modules are the core elements in the Copperfield 2 series of modular ESM receivers originally developed for the Naval Research Laboratory for use in RADAR surveillance applications. Capabilities were further enhanced with the inclusion of an AIS receiver module.

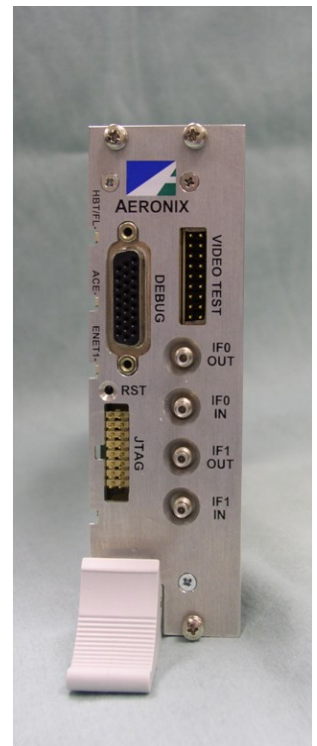
These systems have been fielded on multiple platforms over the past several years, including Predator, Globalhawk, Firescout, and HarborWing, along with other ship and land based installations.

MrDig has six A/D converters running at up to 80MSPS feeding a large Xilinx FPGA, allowing complex digital processing of the data. These A/D converters are fed by one of several IF Mezzanine cards thru a 100 pin connector which provides the 6 IF/video BW differential signal pairs along with general purpose control and synchronization signals.

The processor can be booted from on-board flash, a CompactFlash card, or over the network, fitting into various development or field environments. Linux and Uboot are well supported.

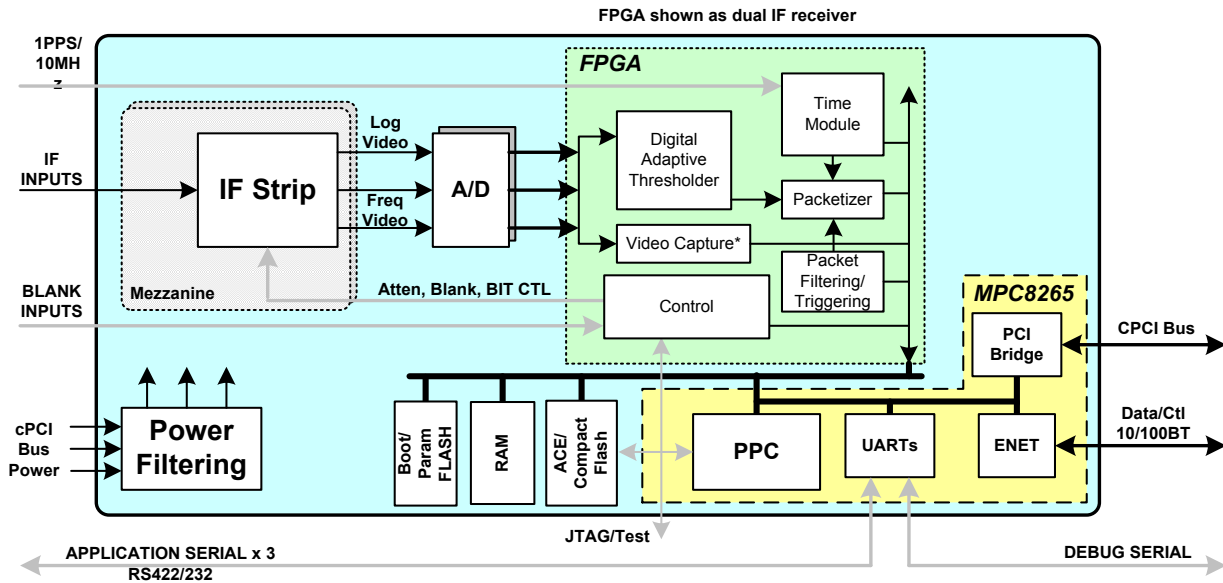
The FPGA can be loaded via the processor or directly from the CF card. Pulse characterization and an AIS modem functions are currently implemented in the FPGA, with little or no load on the processor.

MrDig is a deployable prototype development platform, with excellent Linux support from Aeronix and the community and rapid FPGA development using Xilinx's FPGA tools.



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## IF/RF Mezzanines

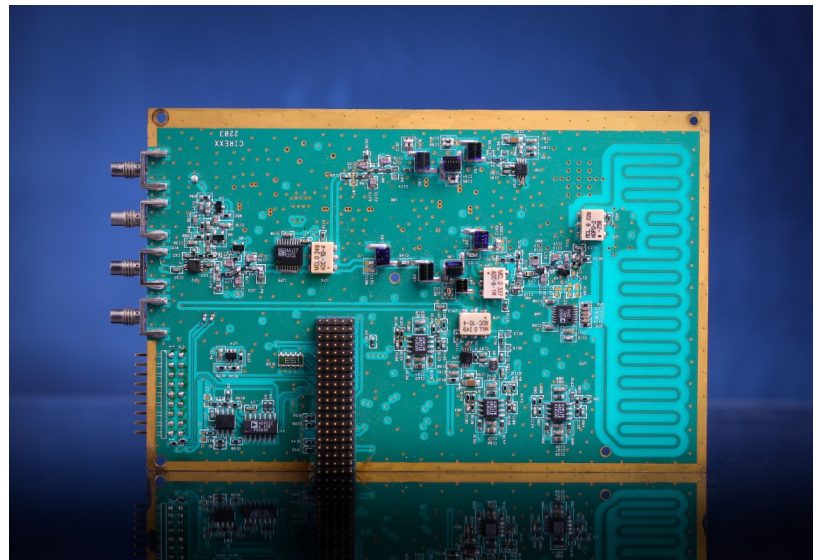
### MrIF Dual IF ESM Receiver:

- Two Channels of:  
100MHz BW @160MHz or  
600MHz BW @1GHz

### MrAIS AIS Modem:

- Dual Band AIS Receiver
- Single Channel 100MHz BW IF receiver

### Custom IF/RF Mezzanine Design Services



## MrDig Specifications:

<b>CPU:</b>	MPC8265 Freescale PPC 266MHz, 166MHz CPM	<b>Interfaces:</b>	CPCI – 32 Bit, Host or Agent, autodetected 2 x 10/100MB Ethernet Ports 4 Serial Ports Aeronix MIRDER Mezzanine CompactFlash Type II Slot 3V and 5V GPIO to Backplane P2/Front Panel
<b>Memory:</b>	256M RAM 32M Flash	<b>ADC:</b>	6 channels / 12-bits Programmable sample rate up to 65MSPS 500MHz analog BW
<b>FPGA:</b>	Xilinx Virtex II XC2V3000 - XC2V6000 Up to 6 million gate equivalents	<b>Mechanical:</b>	Double Wide (w/ Mezzanine) 3U CPCI (5.75"H x 1.6" Wide x 6.3" Deep)
<b>Linux:</b>	Denix Software Engineering ELDK	<b>Power:</b>	< 4 Watts Operational, < 1 A @ 3.3V, < 0.1A @ 5V
<b>Bootloader:</b>	Denix Software Engineering U-boot		
<b>FPGA tools:</b>	Xilinx ISE		