



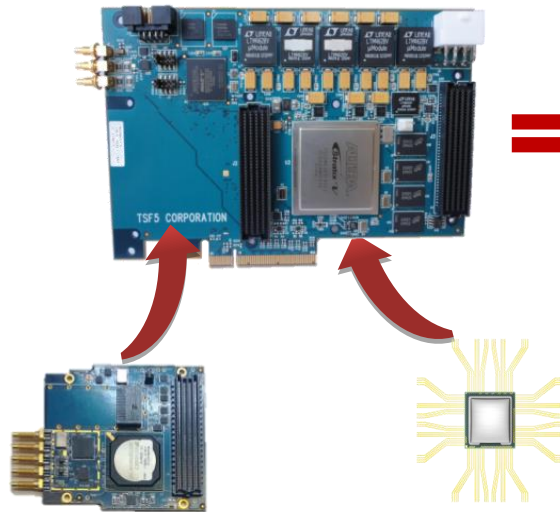
# TSF5 Corporation

## Hunter Model 1003 Data Acquisition and Playback at 16 Bits Dual 250 MSPS 16-Bit ADC - Dual 1.5 GSPS 16-Bit DAC

### Key Features

- Second FMC site is available for expansion of DSP processing capability
- Latest Altera Stratix V GS D5 FPGA with 1,590 DSP blocks
- Timing signal inputs allow precise time stamping of the digitizer outputs
  - IRIG
  - 10 MHz
  - 1 PPS
- PCI Express Interface for up to 8 GB/s data transfer
  - x8 Gen 1/2/3
- 2 GB DDR3 SDRAM
- 2 Analog input channels
  - 16-bit, 250 MSPS std.
  - 14-bit, 500 MSPS opt.
- 2 Analog output channels
  - 16-bit, 1.5 GSPS std.
  - Not Installed opt.
- Default FPGA load supports RAW data acquisition and playback
- VITA57.1 FMC module interface allows for low-cost COTS solutions to support many applications
- Delivered with a fully featured C++ development library to simplify integration with user applications

TSF5 – Hunter PCIe Core Card



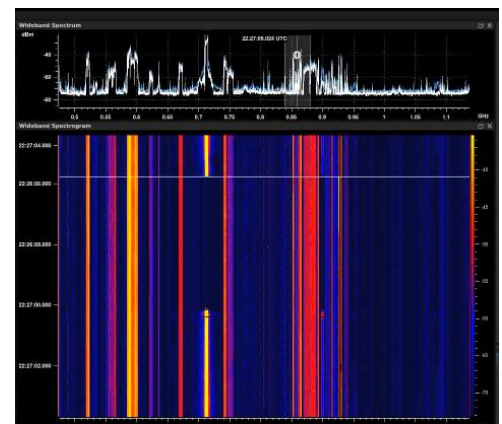
TSF5 Dual Midband ADC & Dual DAC Module

TSF5 FPGA IP

The Model 1003 is a member of the Hunter family of products. The Hunter product line is a modular system using the latest in ultra-high speed interface technology. Multiple high-speed data converters are suitable for processing HF or IF data streams for communications (COMINT) or radar (ELINT) intelligence exploitation. Its built-in data capture features offer an ideal turnkey solution as well as a platform for developing and deploying custom FPGA processing IP. In addition to supporting PCI Express Gen3 as a native interface, the Hunter includes two industry standard VITA57.1 FMC processing sites for flexible modularity to serve any customer need. The modular design of the Hunter allows for an inexpensive solution to many of today's SIGINT mission requirements.

In addition to its industry leading SIGINT capabilities, when loaded with the TSF5 Hornbow algorithm, the Hunter becomes an extraordinarily powerful co-processor, providing a wide range of capabilities to process in real time datasets and mathematically intensive applications that traditionally take hours to complete using standard microprocessor

IF Acquisition and Playback System



The Hunter 1003 includes the TSF5 Midband I/O Module in one of the Hunter's FMC slots. The cardset is then capable of transferring raw data and simultaneously processing data from the two high-resolution ADC inputs. The 16-bit 250 MSPS ADCs are ideally suited for capturing 100 MHz of bandwidth centered at a 160 MHz IF, a much needed capability supporting the intelligence community mission. The 16-bit 1.5 GSPS DAC channels are suitable for playback of the same data captured using the onboard ADCs at a 160 MHz IF. Both dual channel capture as well as dual channel playback support coherent operation.

Expansion options include pairing with the TSF5 Ultra Wideband ADC Module for additional analog inputs capable of capturing greater than 500 MHz of instantaneous bandwidth. The dual DAC channels available with the Midband Module are also suitable for playback of Wideband DDC data captured using the Hunter 1000 with the Ultra Wideband ADC Module. The Midband ADC channels can also be populated with 14-bit 500 MSPS converters.



## Hunter Model 1003 Data Acquisition and Playback at 16 Bits

### Applications

- EW & SIGINT
- Real time signals monitoring with no loss of spectral content
- Signal capture
- Spectrum analysis
- Hardware FFT Acceleration
- Multichannel coherent data capture
- High channel count digital tuner applications
- Communication providers or owners of the spectrum may perform monitoring tasks to ensure proper operation of their systems or to troubleshoot interference problems

### PCIe Core FMC Carrier

#### Power Requirements

+12V 3.0A Typical (some applications may require connection to ATX supply for additional current)

+3.3V 0.5A Typical

#### Physical

Size Single slot, half-length PCIe card (4.2 Inches x 6.6 Inches)

#### I/O

Timing IRIG-B12X, 10MHz, 1PPS (SSMC)

FMC Two sites supporting FMC IO module and processing module  
- Cardset becomes full-length PCIe card with rear FMC slot populated.

PCIe x8 Gen2 (4 GB/s) with support for x8 Gen3 (8 GB/s) in a future firmware update

#### Software

Interactive control program  
C++ Application Programmer's Interface (API)  
64-bit Linux driver

#### Environmental

Operating Temperature 0 to 50 degrees Celsius  
Storage Temperature -20 to 70 degrees Celsius  
Relative Humidity 5 to 95%, non-condensing

### Midband ADC & DAC Module

#### Power Requirements (sourced from core)

+12V 0.0A  
+3.3V 2.7A Max (Est)  
+2.5V(Vadj) 1.0A Max (Est)

#### Physical

Size FMC ANSI/VITA 57.1 standard  
3.0 x 2.7 Inches

#### I/O

Analog Input A, Analog Input B (SSMC)  
2.0 Vp-p

Analog Output A, Analog Output B (SSMC)  
1.0 Vp-p

Trigger In, Trigger Out (SSMC)  
LVTTTL

ADC Clk In, ADC Clk out (SSMC, Micro Coax)  
800mVp-p

DAC Clk In, DAC Clk out (SSMC, Micro Coax)  
800mVp-p

#### Analog to Digital

16-Bit 250 MSPS

#### Digital to Analog

16-Bit 1.5 GSPS

ENOB 11.4 Bits (typ) @ 190 MHz  
SNR 71.5 dBFS (typ) @ 190 MHz  
SFDR 78 dBc (typ) @ 190 MHz

#### Environmental

Matches Core Card

\*All specifications are subject to change without notice.

