

- Choice of Bus Interface
- XMC – x1 Lane PCIe, 2.5Gbps
- PMC – PCI bus 32-bit, 33MHz
- IRIG-B Time Code Input (Digital)
- Optional discrete I/O and IRIG-B
- Available in 2 variants –Air Cooled, Conduction Cooled
- Four Discrete Inputs & four Discrete Outputs
- Rear P16 or Rear P14 or Front I/O available
- DIP Switch Configuration provided to control transceivers
- On Board GPS Module provided
- On Board SMA connector specifically for GPS communication
- Optional GPS receiver provided on the card
- Front panel connector (68 PIN VHDCI) for easy access to all IOs
- 8 Serial Communication ports provided
- 4 ports provide full functionality
- 4 ports provide half control (RS232 / RS422 / RS485)
- High-level API for Windows XP, Windows 7 & Linux

OVERVIEW

The AT-XMC/PMC-GPS is a slave mezzanine Card which provides x1 Lane PCI-Express interface or 32 bit PCI interface with the host system. It provides interface to host with different types of IO signals for the avionics domain user interactions. The board has an onboard clock, which is kept in sync to either an external time code input or time provided by GPS satellites. Several timing functions are derived from the on-board clock including a programmable periodic pulse rate output ("Heartbeat"), a programmable start/stop output ("Match"), a selectable frequency output ("Oscillator Out", 1 kHz, 1, 5, or 10 MHz) & a time-stamping input ("Time-Tag").

An onboard IRIG-B time encoder & decoder allow users to accurately synchronize single or multiple modules to a common time source. The card has implemented all its Discrete IO logic in the FPGA. An Octal UART is used to implement serial port functionality. The Card consists of 8 ports of which 4 ports provide full functionality & other 4 provide half control. When configured for RS232 mode a port provides the full set of data & modem control lines. It can also be configured in RS485/RS422 mode. GPS functionality is provided by a receiver built into the antenna housing & communicates to the board via (RS-422) interface.

SOFTWARE

The AT-XMC/PMC-GPS software includes Drivers & APIs which come with a powerful set of library functions to access the entire SPT functionality. The drivers are designed in a modular fashion consisting of component functions & application functions. The user's test program can be developed with few calls to the driver by using the set of application functions provided. All data bus functionality is supported by our advanced API (Application Programming Interface). Driver & high-level API libraries for Windows XP, Windows 7 & Linux are available.

PRODUCT SPECIFICATIONS

Bus Interface

- XMC - x1 lane PCIe, 2.5Gbps (PCIe base specification 1.0a)
- PMC - 32-bit, 33/66 MHz (PCI 2.2)

Onboard Clock

- Synchronization to GPS $\pm 1\mu\text{s}$ max
- Synchronization to time code input $\pm 1\mu\text{s}$ max
- Time base (freewheeling) type
- Resolution $1\mu\text{s}$

GPS Antenna Cable

- Active Antenna
- Supply voltage range 3 to 5V
- Length 5m
- RG174 standard
- SMA plug connector
- Magnetic base for mounting

GPS Receiver Module

- 50-channel u-blox 5 engine
- No of satellites tracked 16
- Acquisition time 32 seconds (typical)
- High immunity to jamming

- Horizontal position accuracy
- Tracking & Navigation -160dBm
- Reacquisition -160dBm
- Cold start - 144dBm
- Max Navigation Update Rate 4 Hz
- Velocity Accuracy 0.1m/s
- Heading Accuracy 0.5 degrees
- Dynamics = 4 g
- TIMEPULSE (1Hz Nav) 1 pulse/s, synchronized at rising edge, pulse length 100ms
- NMEA Input/Output Protocol supported
- SMA Antenna Connector

Time Code input

- Format IRIG-B (122)
- Modulation ratio 3:1 typical
- Input impedance 10K Ω

Time Code Output

- Format IRIG-B(122) (CF & SBS fields not used)
- Amplitude (mark) 3.0 Vp-p min, 4.0 Vp-p typical, 6.5 Vp-p max
- Modulation Ratio 3:1 (typical)

AT-XMC/PMC-GPS

Multichannel High Performance Serial Port Timing Card

Discrete I/O

- Optional four Discrete Inputs & four Discrete Outputs
- Open/GND (Common - break) Discrete Inputs
- Open/GND (Common - break) Inputs are diode protected
- All Discrete Input Conditioning at TTL Levels, level translated to 3.3V for internal use
- Discrete outputs through PhotoMOS relays to switch DC/AC loads

Other I/O's include

Time Tag Input

- Tagged Edge Rising
- Rise/Fall Time 150 ns max
- Pulse Width (time high) 1 µs min, 999.999 mS max
- Time Between Each Rising Edge 500 µs min
- Repetition Rate 2000 events/s max
- Time Tag Accuracy ± 1 µs

Oscillator Output

- Output Off, 1 kHz, 1, 5 or 10 MHz (programmable)
- Power-on Default Frequency Off
- Output Type Differential RS-422
- Wave Shape Square wave, 40% / 60% duty cycle
- Recommended Termination 120 Ω, ½ Watt, line-to-line

Heart Beat Output

- Wave Shape Pulse
- Pulse Polarity Programmable
- Pulse Width 100 ns, 333 ns, 1 µs or 1 ms (Programmable)
- Output Current (high or low) 2.5 mA max
- Range 200 ns to 65.5 Seconds
- Power-on Default Disabled

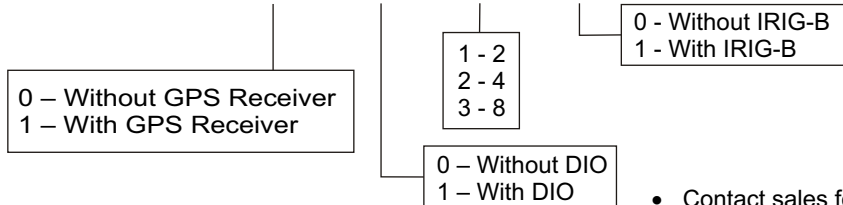
Match Output

- Output Voltage (high) 3.8 V at 4 mA
- Output Voltage (low) 0.3 V at -4 mA
- Output Current (high or low) ±6 mA max
- Setability 1 µs

ORDERING INFORMATION

Hardware Selection

AT-XMC/PMC-GPS - GPS Receiver - DIO - Serial Ports - IRIG B



In-sync output

Output Type	Open Collector
External Pull-up Voltage	+5 VDC max
Output Voltage (low)	+0.5 V max at -20 mA
Output Current (low)	-20 mA max

1PPS Output

- Single Ended Output
- Synchronized to On-Time Edge Rising
- Pulse Width 4 µs or 100ms

IO Configurations

- IO available on both Front Panel 68 pin VHDCI Connector & Rear Connectors (P14 - PMC or P16 - XMC)
- Standard configuration is P16 rear panel I/O

Software Support

- Driver & high-level API libraries for Windows XP, Windows 7 & Linux available
- Sample applications provided to help users quickly setup & use the card

Physical

- Standard Single wide Mezzanine Card form factor conforming to IEEE 1386.1 (74 mm x 149 mm)
- Conduction Cooled XMC/PMC Card without Bezel

Environmental

	Air-Cooled	Conduction-Cooled
Operating Temperature	0°C to + 60°C	-40°C to + 85°C

Power

- Primary Supply +5V, +3.3V, +12V & -12V from PMC Connectors when configured as a PMC Card, +3.3V & all other voltages internally derived
- Primary Supply +3.3V, +12V & -12V from XMC Connectors when configured as XMC Card, all other voltages internally derived

Warranty

- 1 year limited warranty



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