PnP Innovations, Inc.

SpaceWire Based Plug-and-Play Interface Card

PnP Innovations has developed several key avionics components to support spacecraft data communications and simulations. In order to accommodate ground based testing and integration support, a single PCIe based computer board was developed which integrates the three key areas of system design by providing a network entry point for SpaceWire (SpW), Timing Synchronization, and a Test ByPass. The SpaceWire port provides a standard SpaceWire network connection. Time synchronization provides a method for sending or receiving a 1 to 1000 Hz synchronization pulse which can be coupled into PC based simulations via interrupt. The Test ByPass interface provides 6 channels of high speed asynchronous serial communications.

This board has been utilized by many companies on multiple programs.
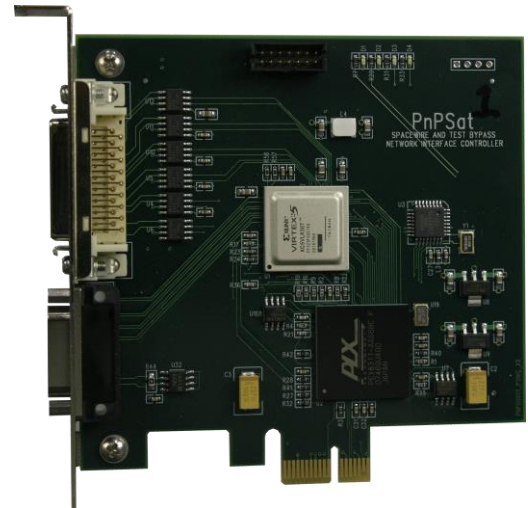
SPACEWIRE
- Protocol compliant with ESA Specification
- Max link speed of 320 Mbps
- Supports sending and receiving SpW Time Codes
- Direct Support for RMAP

HIGH SPEED UARTS
- Six high speed asynchronous serial channels
- 4kB Buffer space per channel (2kB TX/ 2kB RX)
- RS422 signaling levels
- Max speed of 460.2 kbps per channel
- Can be utilized for Test ByPass Simulations

TIMING SYNCHRONIZATION
- Board can source or sink timing pulse
- RS422 signaling levels
- Provides software interrupt for synchronization
- Programmable interrupt multiplier rate

BOARD INFORMATION
- MicroD 25 pin connector SpW & Timing
- MDR 36 pin connector for UARTs
- PCIe x1 Form Factor (Single Lane)

APPLICATIONS
- Sensor Simulation
- Component Integration
- Network Experimentation
- General Ground Support for SpW

DELIVERABLES
- Board User Guide
- RMAP Software Library
- RMAP Library User Guide
- Windows Driver
- Optional Cabling