

**PRELIMINARY**

**Precise Position Service (PPS)  
 GPS Solution  
 for the CompactPCI bus**

**Features:**

- The SATPAK-CompactPCI-FORCE22 is a 3U form factor carrier board that provides a Compact-PCI interface for the Precise Position Service (PPS) military Trimble FORCE 22 GPS receiver.
- 32-bit PCI interface using CompactPCI connector J1.
- Employs a PLX9050 Bus Target Interface Chip and a PC16554 Quad Universal Asynchronous Receiver Transmitter (QUART) to provide a COM port interface to each of the three serial communication channels of the FORCE 22. The fourth COM port of the QUART is provided for any user-defined function.
- The SATPAK-CompactPCI-FORCE22 provides access to all the FORCE 22 capabilities including: 12 Channel, GRAM compliant, L1/L2, DS-102/DS-101 key loading, SAASM, 1PPS/10PPS/UTC/Time Mark, Have Quick interface, optional SINGGARS interface, PVT Output, navigation capability, ICD-GPS-153 interface, Differential GPS interface, NMEA interface, Trimble Diagnostic interface, and 3 serial communication channels.
- Primary FORCE 22 power is +5 VDC provided by the CompactPCI Bus power pins.
- Backup power for the FORCE 22 provided by an onboard rechargeable lithium battery. Backup power is used to preserve cryptovariables, maintain the low-power time source, and maintain non-volatile RAM.
- A front-panel 50-pin male header is provided for DS-102/DS-101 Key Loading, SA-AS loading, Have Quick Interface, Optional SINGGARS interface, Differential GPS Interface, 1PPS/10PPS outputs, and time maintenance power.
- Dual antenna inputs (main and auxiliary) via front panel SMA connectors.
- Front panel SMA connector input for external timing interface (11.68 or 12.8 MHz).
- The Trimble FORCE 22 incorporates Selective Availability Anti-Spoofing Module (SAASM) technology.
- The SATPAK-CompactPCI can be provided with or without the **FORCE22 GPS module attached.**
- Custom cable assemblies available for Have Quick, SINGGARS, Differential GPS interface, and KYX-13, KOI-18, AN/CYZ-10 key loading devices..

**SATPAK-CompactPCI-FORCE22 Function:** The SATPAK-CompactPCI-FORCE22 is a 3U form factor carrier board that is specifically tailored to accommodate the Trimble FORCE 22 GPS

Zeli Systems  
 Phone (915) 751-3222

receiver module. The FORCE 22 is a military Precise Position Service (PPS) GPS receiver that provides 12 channel tracking, GRAM compliance, L1/L2, DS-102/DS-101 key loading, SAASM, 1PPS/10PPS/UTC/Time Mark, Have Quick interface, optional SINGGARS interface, PVT output, navigation capability, ICD-GPS-153 interface, Differential GPS interface, NMEA interface, Trimble Diagnostic interface, dual antenna input, external timing input, and 3 serial communication channels.

**Comment:**

**Communicating with the Trimble FORCE 22:** The FORCE 22 utilizes three (3) independent serial interfaces. The RS-232 and RS-422 signal levels for the three serial interfaces are converted to TTL and then transmitted and received over the CompactPCI bus using a PLX9050 Bus Target Interface Chip and an industry standard PC16554 quad universal asynchronous receiver transmitter (QUART). The fourth unused port of the QUART can be dedicated to any user-defined function. Each of the serial interfaces appears as a COM port to the CompactPCI system controller. A front panel 50-pin connector is provided for DS-102/DS-101 key loading, SA-AS loading, Have Quick interface, Optional SINGGARS interface, Differential GPS interface, 1PPS/10PPS outputs and time maintenance power. Front panel SMA connectors are provided for an external timing input and main and auxiliary antenna inputs.

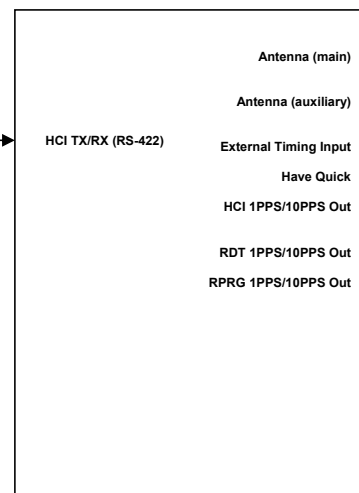
**Mechanical Considerations:** The SATPAK-CompactPCI-FORCE22 measures 100mm x 160mm x 15.24mm when mated with the FORCE22. This concept allows the FORCE22 and the SATPAK-CompactPCI to occupy only one bus position.

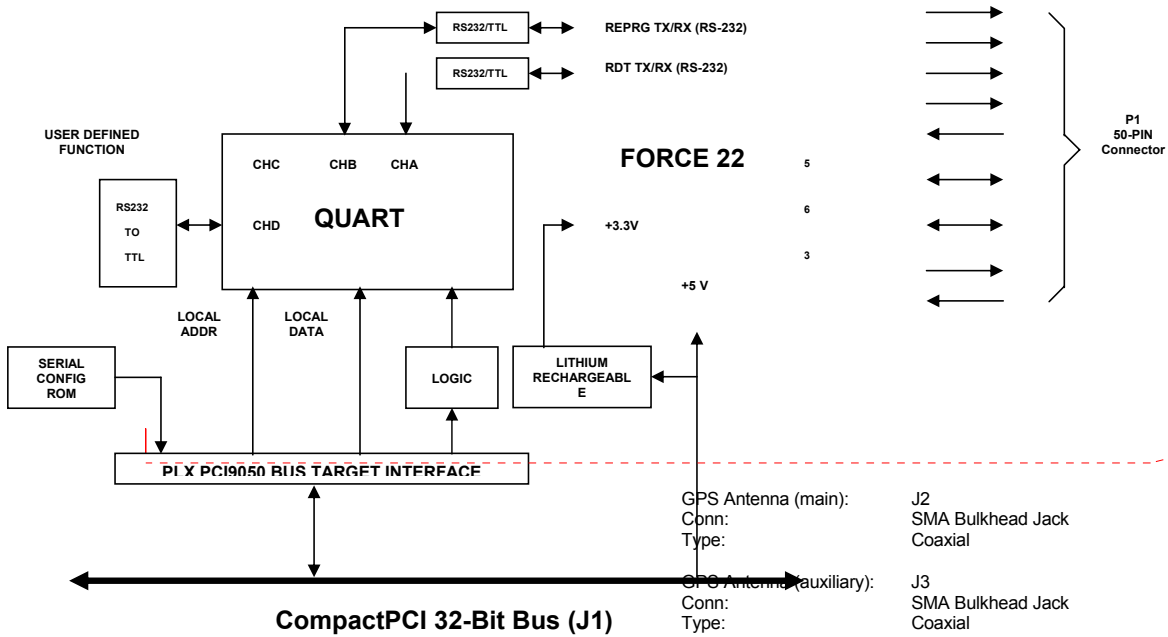
**Software Drivers:** Windows NTv4.0 and Windows 2000 drivers available.

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**SATPAK-CompactPCI-FORCE22  
 SPECIFICATIONS**

3233 Pagosa Ct., El Paso, TX 79904  
 FAX (915) 751-3222





**Comment:**

- GPS Antenna (main): J2  
Conn: SMA Bulkhead Jack  
Type: Coaxial
- GPS Antenna (auxiliary): J3  
Conn: SMA Bulkhead Jack  
Type: Coaxial
- Timing Interface Input: J4  
Conn: SMA Bulkhead Jack  
Type: Coaxial

**Mechanical, Environmental, Power:**

Physical Dimensions: 100 mm x 160 mm x 15.24 mm  
(with FORCE 22 attached)  
 Operating Temp: -40°C to 85° C  
 Humidity: 0 to 99% (non-condensing)  
 Power:  
 +5V +/- 5%, 0.060 A (without FORCE 22)  
 +5V +/- 5%, 0.660 A (with FORCE 22)  
 Fabrication: 1.6 mm, FR4

**Ordering Information:**

Use the part numbers below to order the SATPAK-CompactPCI-FORCE22. Please note that the FORCE 22 module can be ordered with the SATPAK and supplied as a complete integrated and tested assembly by adding the "GPS" suffix to the part number.  
 SATPAK-CompactPCI-FORCE22 Without FORCE22

**Connectors:**

FORCE 22 I/O: P1  
 Conn: FORCE 22 I/O  
 Type: Dual row right-angle  
 PN: Samtec TFML-125-02-S-D-A  
 CompactPCI: J1  
 Conn: 2mm, 150 position  
 Type: 32-bit bus connector

**Note:** Each serial I/O channel on the FORCE 22 can bypass the QUART for communication via P1 if desired. Simple push-on jumpers are used to perform bypass function.

**Connectors (cont):**