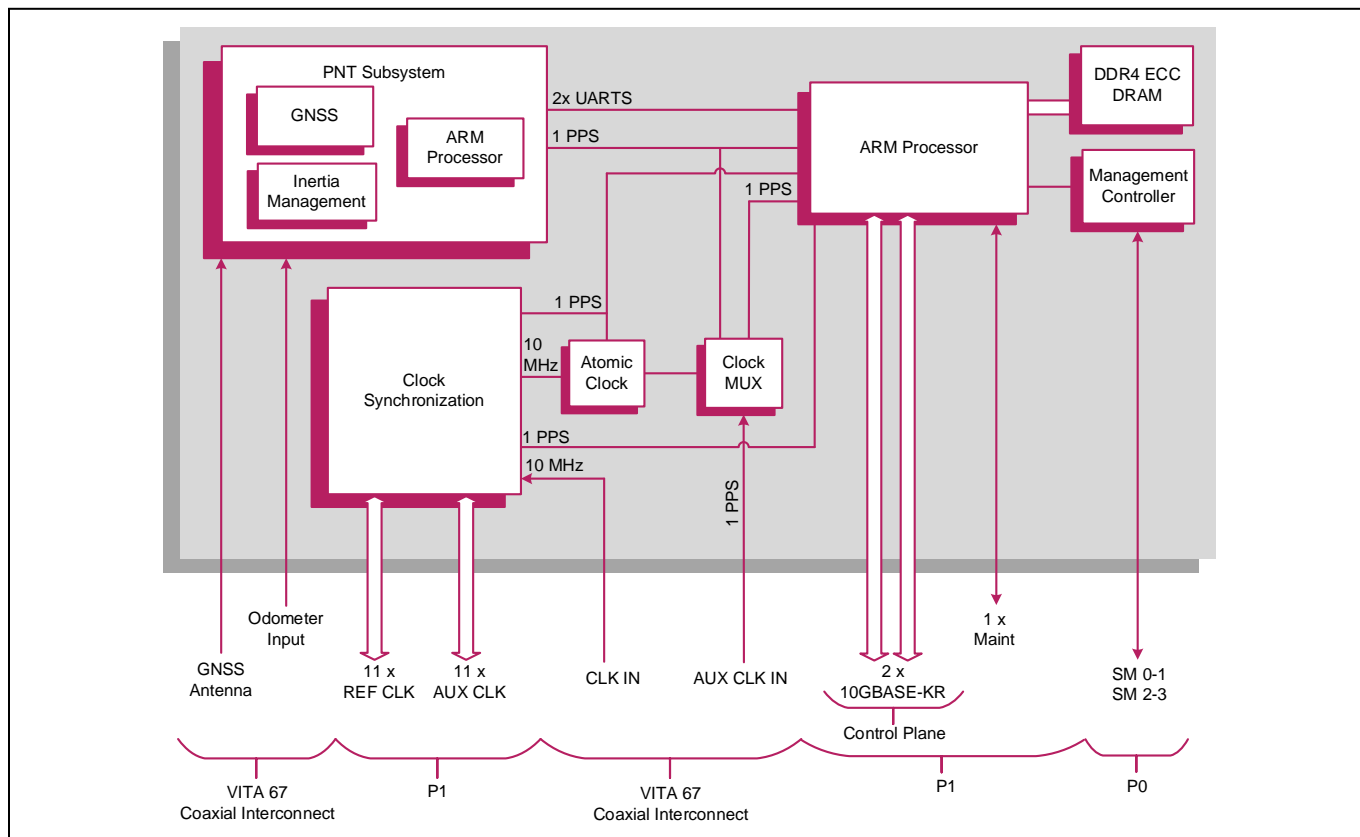


Rugged 3U VPX™ Position, Navigation and Timing (PNT) Plug In Card

Key Features

PR A11/61d-RCx is a rugged 3U VPX Plug In Card (PIC) for high accuracy and resilient Position, Navigation and Timing (PNT). It is designed in alignment with the SOSA™ Technical Standard to be suitable for future Electronic Warfare and Cyber Security applications.

- 4-core ARM v8 A72 Processor for control and management
- Integrated multi-constellation, multi-frequency GNSS module with interference and jamming mitigation
- Chip Scale Atomic Clock (CSAC) and Inertial Measurement Unit (IMU) for assured PNT
- Differential radial clock distribution
- Coaxial Antenna and Timing signals in P2 aperture



VPX PNT Plus In Card

- rugged conduction-cooled 3U VPX™ PIC
- compatible with the OpenVPX™ profiles:
 - SLT3x-TIM-2S1U22S1U2U1H-14.9.2-1
 - MOD3x-TIM-2S1U22S1U2U1H-16.9.2-2
- Aligned to SOSA™ Technical Standard

Control and Management Processor

- 4-core ARM v8 A72 Processor
 - up to 1.8 GHz operation
- up to 8 Gbytes soldered DDR4 ECC DRAM
- Secure Boot
- enables configuration and control of all PNT parameters and settings

GNSS Receiver

- configurable satellite constellation tracking:
 - GPS: L1C/A, L1C, L1P/Y, L2C, L2P, L5
 - GLONASS: L1CA, L2CA, L2P, L3 CDMA
 - Beidou: B1I, B1C, B2a, B2I, B311
 - Galileo: E1, E5a, E5b, E5 AltBoc, E611
 - QZSS: L1C/A, L1C, L2C, L5, L611
 - SBAS: Egnos, WAAS, GAGAN, MSAS, SDCM (L1, L5)
- configurable mode SBAS, DGNSS, RTK
- 100Hz measurement output

Chip Scale Atomic Clock

- frequency: 10.0 MHz
- 1PPS output for synchronization
- $\pm 5.0E-11$ accuracy at shipment
- $9.0E-10$ /mo Aging Rate
- $1.5E-11$ @1000s Short Term Stability

Inertial Measurement Unit

- 10 degrees of freedom IMU
- 3-axis accelerometer
- optional odometer integration

Serial Port

- 1x Maintenance port accessed via P1

Backplane Ethernet Ports

- Control Plane:
 - 2x 10GBASE-KR Ethernet port via P1
- NTP and PTP server protocol support

Timing signals

- LVDS radial clocks (P1)
 - 11x differential REF clocks
 - 11x differential AUX clocks
- RF timing (VITA 67.3 Aperture 2 10 SMPM contacts)
 - 1x GNSS antenna
 - AUX CLK in/out
 - REF CLK in/out

Software Functionality

- IEEE802.1AS Precise Time Protocol (PTP) support, allowing synchronization of systems to within 100ns of each other
- Network Time Protocol (NTP) support:
 - allowing synchronization to within 1ms or better
 - the PIC can act as a Stratum 1 NTP server
- Command Line Interface (CLI) available via Maintenance Port, allowing easy user configuration

System Management

- VITA 46.11 Tier-2 IPMC on-board controller:
 - SM0-1 and SM2-3
 - temperature and voltage monitor accessed via System Management interface

Safety

- PCB (PWB) manufactured with flammability rating of UL94V-0

Electrical Specification

- typical current figure:
 - +12V VS1 @ TBD A
 - +3.3V AUX @ TBD A
- +5V and +3.3V are not connected

Environmental Specification

- conduction-cooled (VITA 48.2)
- operating temperature at card edge:
 - VITA 47 Class CC4, -40°C to +85°C (RCx-Series)
- non-operating temperature:
 - VITA 47 Class C4, -55°C to +105°C
- operating altitude:
 - -1,500 to 60,000 feet (-460 to 18,300 meters)
- relative humidity: 5% to 95%, non-condensing

Mechanical Specification

- 3U VPX form-factor (VITA 46.0, VITA 48.0):
 - 3.9 inches x 6.3 inches (100mm x 160mm)
- slot width (VITA 48.0):
 - 1.0-inch VPX-REDI Type 1, RCR-Series, Type 1 Extended Covers Two Level Maintenance (VITA 48.2)
- connectors to VITA 46.0 for P0 and P1
- captive screws available to secure front handles
- operating mechanical:
 - shock - VITA 47 Class OS2, 40g
 - random vibration – VITA 47 Class V3, 0.1g²/Hz