# VPX
## (OpenVPX)

**powerBridge**
Computer

Ehlbeek 15a
30938 Burgwedel
fon 05139-9980-0
fax 05139-9980-49

www.powerbridge.de
info@powerbridge.de

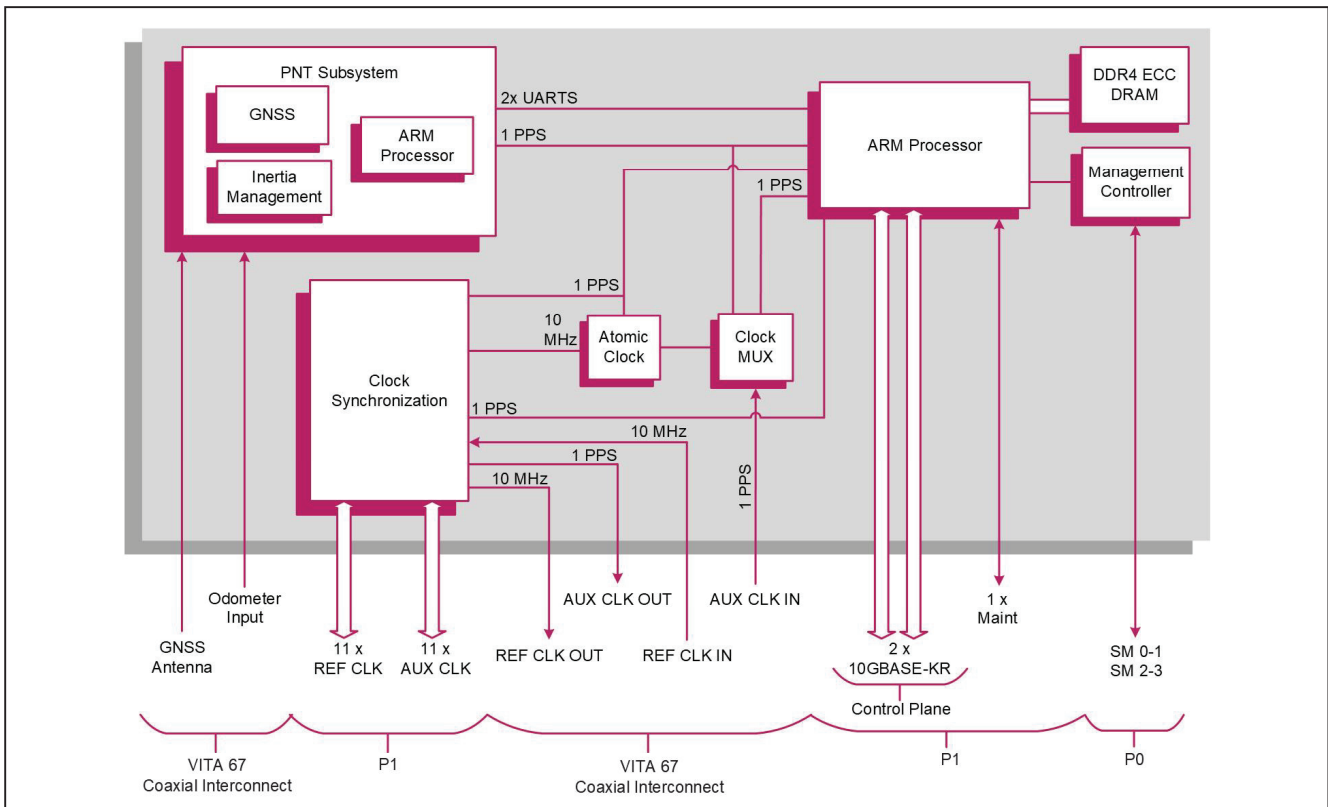# PR A11/6sd-RCx
### RCR - Series

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

## Key Features

PR A11/6sd-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





# CONCURRENT
# TECHNOLOGIES

**Concurrent Technologies Plc** 4 Gilberd Court, Colchester, Essex, CO4 9WN, UK
Tel: +44 (0)1206 752626
**Concurrent Technologies Inc.** 400 West Cummings Park, Suite 1300, Woburn, MA 01801, USA
Tel: (781) 933 5900
**email: info@gocct.com   www.gocct.com**

## VPX PNT Plug 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
- soldered DDR4 ECC DRAM
- manages configuration, control and distribution of all PNT parameters and settings

## GNSS Receiver
- configurable satellite constellation tracking:
  - → GPS: L1C/A, L2C
  - → GLONASS: L1OF, L2OF
  - → Beidou: B1I, B2I
  - → Galileo: E1B/C, E5B
  - → QZSS: L1C/A, L1S, L2C
  - → SBAS: L1C/A
- configurable mode SBAS, RTK, DGPS
- 100 Hz measurement output

## Chip Scale Atomic Clock
- frequency: 10.0 MHz
- 1 PPS output and 1 PPS input for synchronization
- 5.0E-11 accuracy at shipment
- 9.0E-10 /mo Aging Rate
- 1.5E-11 @ 1000 s Short Term Stability

## Inertial Measurement Unit
- 6 degrees of freedom IMU:
  - → 3-axis accelerometer
  - → 3-axis gyrometer
- optional odometer integration

## Backplane Ethernet Ports
- Control Plane:
  - → 2x 10GBASE-KR Ethernet port via P1
- NTP and PTP support
- UDP broadcast of NMEA or raw packets via one or both Control Plane ports
- Publisher/Subscriber model of data distribution

## Other Peripheral Interfaces
- 1x Maintenance port accessed via P1
- 1x USB 2.0 diagnostic port via front panel

## Timing signals
- LVDS radial clocks (P1)
  - → 11x differential REF clocks (output selectable: 10 MHz, 25 MHz, 50 MHz or 100 MHz)
  - → 11x differential AUX clocks (output selectable: 1 PPS or 10 MHz, 25 MHz, 50 MHz or 100 MHz)
- RF timing (VITA 67.3 Aperture)
  - → 1x GNSS antenna
  - → AUX CLK in/out
  - → REF CLK in/out

## Time Synchronization
- system time synchronization between GNSS and CSAC
- RTC with VBAT connection

## VITA 67.3 Aperture
- 10 SMPM and 14 SMPM connector option

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

## Security
- Trust Architecture 2.1
- Secure Boot

## System Management
- VITA 46.11 Tier-3 IPMC on-board controller:
  - → SM0-1 and SM2-3
  - → temperature and voltage monitor accessed via System Management interface
  - → PNT status monitored via System Management interface

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

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

## Environmental Specification
- conduction-cooled (VITA 48.2)
- operating temperature at card edge:
  - → VITA 47 Class CC3, -40 C to +70 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 (100 mm x 160 mm)
- 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, 40 g
  - → random vibration – VITA 47 Class V3, 0.1 g /Hz

Please contact your local Concurrent Technologies sales office for further details on board build options and accessories.
Specifications are preliminary and subject to change; E and OE.

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