

# AVIONICS SINGLE BOARD COMPUTER



## 3U VPX Single Board Computer

FPGA-based Single Board Computer with ARINC-429, RS-422, RS-232, SPI, I<sup>2</sup>C, GPIO, 10/100 Mbps Ethernet, MIL-STD-1553, Avionic Discrete and USB 3.0 interfaces.

### Specifications

#### Compatibility

- 3U VPX Form Factor
- RT2/RVPX High-Density VPX Connectors (280 pins)
- MIL-STD-1553B Notice 2
- ARINC-429
- RS-232, RS-422, SPI and I<sup>2</sup>C
- 10BASE-T and 100BASE-T Ethernet

#### Environmental

- Conduction cooled
- -40°C to +71°C temperature range
- 5% to 90% relative humidity (non-condensing)

#### Power

- +12V (8A), +5V (8A), +3.3V (4A), -12V (2A)

#### Available Configurations

- Xilinx Zynq Ultrascale+ 7EV 900BGA FPGA with ARM Cortex processor
- ARINC-429: 16 Rx channel and 8 Tx channels; or 32 Rx channel and 16 Tx channels
- Options for many interfaces, including RS-232, RS-422, I<sup>2</sup>C, SPI, GPIO, 10/100 Mbps Ethernet, MIL-STD-1553, Avionic Discretes, USB 3.0 and PCI Express

#### Software Provided

- Operating system and BSP for Green Hills Integrity-178 tuMP, Petalinux, VxWorks or other operating systems
- API/library/driver software for all interfaces, for Green Hills Integrity-178 tuMP, Petalinux, VxWorks, bare metal (no OS) or other real time operating systems

#### Sital Technology USA

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### Key Features and Benefits

- Conduction-cooled 3U VPX board with RT2/RVPX High-Density VPX Connectors
- Xilinx Zynq Ultrascale+ 7EV 900BGA FPGA with on-chip ARM Cortex processor
- ARINC-429, with options for 16 Rx channels and 8 Tx channels or 32 Rx channel and 16 Tx channels
- One full-duplex RS-422 Interface
- Two RS-232 interfaces
- 4 SPI interfaces
- 7 I<sup>2</sup>C interfaces. These include 5 user I<sup>2</sup>C interfaces, along with an SMBus (system management) and PMBus interface (power management)
- 8 Bidirectional GPIO interfaces
- 5 10/100 Mbps Ethernet interfaces
- Up to four MIL-STD-1553 interfaces
- 8 Avionic Discrete interfaces
- USB 3.0 interface
- Single-lane PCI Express Gen. 2 interface
- Roadmap to include XMC site

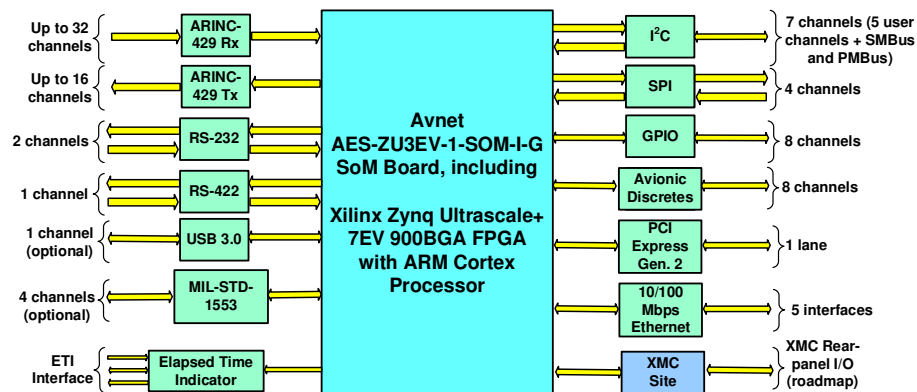


Figure 1. Block Diagram

More information is available at [www.sitaltech.com](http://www.sitaltech.com)  
Email: [info@sitaltech.com](mailto:info@sitaltech.com)

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## Deliverables:

### 6U VPX Single Board Computer Board

P/N: BRDSBC429  
(See Table 1 for options)

- Other configurations and protocols are available. Please contact Sital

### Connections

- Standard 3U VPX with RT2/RVPX high-density connectors

### Warranty and Support

- 3-year limited hardware warranty
- 1-year technical support including free software upgrades

# 3U VPX Single Board Computer

## 3U SBC Board Functionality

Sital Technology is pleased to introduce its BRDSBC429 FPGA-based single board computer (SBC). This board includes an FPGA-based computer consisting of an ARM Cortex processor integrated on a Zynq Ultrascale+ FPGA. The board also includes up to 32 ARINC-429 receive channels, 16 ARINC-429 receive channels, along with several other on-board interfaces. The other interfaces include RS-422, RS-232, SPI, I<sup>2</sup>C, GPIO and 10/100 Mbps Ethernet. Some versions of the board will also include PCI Express, MIL-STD-1553, avionic discrete and USB interfaces.

The board is supplied with a real-time operating system, BSP and drivers for either PetaLinux or Green Hills Integrity-178 tuMP. Software drivers for “bare metal” (no operating system) can also be provided.

For its ARINC-429 and/or MIL-STD-1553 interfaces, the board includes options for Sital’s Safe and Secure (SnS) technology. By means of enhanced physical layer signal monitoring, Sital’s SnS technology can detect cyber authentication “spoofing” (impersonation) violations. In addition, SnS is able to detect, categorize and locate intermittent or continuous open or short circuit wire faults in data bus and stub cables, connectors, couplers (for 1553), bus terminators or connected LRUs.

Figure 1 is the board’s block diagram. As indicated in Table 1, the BRDSBC429 board will be available in a variety of optional configurations.

**Software.** The board is provided with a choice of PetaLinux or Green Hills Integrity-178 tuMP operating system, BSP and driver software for all interfaces. Drivers can also be supplied for VxWorks, “bare metal” (no operating system) and other real time operating systems.

**Certiability.** The board and software are available with options for DO-254 and/or DO-178 certiability (including artifacts) at levels up to and including DAL A. Note that DO-254 and DO-178 certiability is not available for the board’s Ethernet interfaces or Ethernet API/library/driver software.

Table 1. BRDSBC(CAR)429 Product Options  
(Not all combinations shown)

Part Number	- SoM board and FPGA processor - 2 - RS-232 - 1 - RS-422 - 7 - I <sup>2</sup> C - 4 - SPI - 8 - GPIO - 5 - 10/100 Mbps Ethernet - Elapsed Time Indicator	ARINC-429 Rx channels	ARINC-429 Tx channels	- 4 - MIL-STD-1553 - 8 - Avionic Discretes	- PCIe Gen. 2 - USB 3.0
BRDSBC429-16Rx-8Tx	✓	16	8	--	--
BRDSBC429-32Rx-16Tx	✓	32	16	--	--
BRDSBC429-32Rx-16Tx-4/1553-8AD	✓	32	16	✓	--
BRDSBC429-32Rx-16Tx-4/1553-8AD-PCIE-USB	✓	32	16	✓	✓

#### NOTES:

1. To order as a 3U VPX carrier board only without the SOM board installed, the part number is BRDCAR429-XXX...
2. The board is provided with a choice of PetaLinux or Green Hills Integrity-178 tuMP operating system, BSP and driver software for all interfaces. Drivers can also be supplied for VxWorks, “bare metal” (no operating system) and other real time operating systems.
3. The board and software are available with options for DO-254 and/or DO-178 certiability (including artifacts) at levels up to and including DAL A. Note that DO-254 and DO-178 certiability is not available for the board’s Ethernet interfaces or Ethernet API/library/driver software.