

# TECHNICAL DATASHEET

Per Vices Corporation  
High Performance SDR for Test and Measurement

## CYAN TECHNICAL SPECIFICATIONS

Independent Rx/Tx Channels	1 - 16
Dynamic Range (dB)	25 - 70
SFDR (dB)	65
Frequency Tuning Range	near DC - 18 GHz (Upgradable to 40 GHz)
Frequency Resolution	0.0625 Hz
Frequency Accuracy	50 ppb
Tuning Time	2 ms
Fast Tuning Time	40 us
Sweep Speed	16 GHz/ms (Custom option 20 - 60 GHz)
Rx Power Gain - Low RF Stage (dB)	15 - 45
Rx Power Gain - High RF Stage (dB)	-10 - 65
Rx Noise Figure (dB)	3.1 - 7
Rx ADC Resolution	16 bit
Rx Sampling Bandwidth	1 GHz
Rx ADC Sample Rate (GSPS)	1 GSPS
Tx Power Gain - Low RF Stage (dBm)	-10 - 18
Tx DAC Resolution	16 bit
Tx Sampling Bandwidth	1 GHz
Tx DAC Sample Rate	1 GSPS
Antenna Interface	50 $\Omega$ SMA
FPGA	Intel Stratix 10 SoC 2800k Logic Elements
CPU	ARM Cortex-A53 Processor 1 - 4 Cores
Networking	40GBASE-R x4, qSFP+ Total of 160 Gbps data transfer rate
Operating Temperature	5°C - 40°C
Mass	11 kg
Volume	3U, 19" rackmount serve
MTBF	23.6k hrs @ 40 °C

## SDR INTEGRATION

Cyan is a powerful tool for test & measurement. Whether it be for testing circuit design, prototyping, or network and communication protocols, Cyan is able to provide multi-functional capabilities to assist and save time during development phases. The 1 to 16 independent channels can be configured for as many Tx or Rx channels needed, and provides SMA connectors to antenna or other devices under test. The platform can be integrated easily into your host system via quad 40GBASE-R qSFP+ interfaces.

## INTERNAL ARCHITECTURE

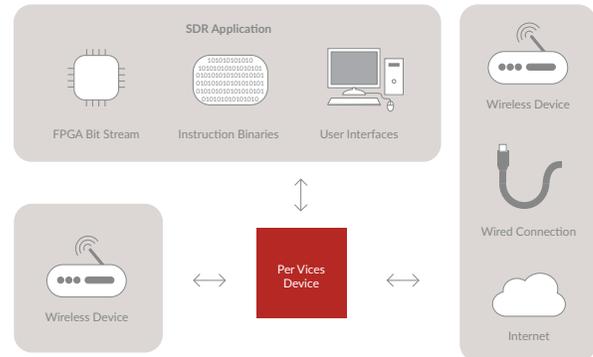
Cyan is able to be connected to recording and processing systems, provided and configured by Per Vices, for T&M applications requiring remote, extensive and long term data recording and processing. The Cyan SDR incorporates both radio and digital resources to allow for radio tuning, configuration, conversion of analog to digital signals, DSP on a FPGA, and passing the data over four 40 Gbps ports. Moreover, the FPGA can be configured for controlling, testing and optimizing MIMO antenna arrays for new 5G networks. The Digital board hosts the FPGA to manage communications with the host computer in addition to in-unit DSP for quick response. The Digital board sends data to DACs on the Transmit board, and receives data from the ADCs on the Receive board through high speed interfaces. The Time board distributes clock signals to all boards, from either an internal reference crystal or user provided reference through a 50 Ohm SMA. The Power board distributes power to all boards from a Power Supply Unit compatible with 120V or 240V AC input.

Moreover, the FPGA can be configured for controlling, testing and optimizing; such as MIMO antenna arrays for new 5G networks. The system is highly flexible and reconfigurable due to the FPGA, MIMO, and modular board design; allowing for development using various channels for different tasks. Additionally, we accommodate changes to the form factor of the chassis and IP cores for testing multiple communication protocols and frequency bands simultaneously. The product includes UHD compatibility and can be easily interfaced with a host system to run GNU Radio or other software development toolkits.

## INTEGRATION CAPABILITIES

- Network & Spectrum Analyzer Capabilities
- Oscilloscope
- Signal generator
- Power Meter
- Antenna Interface for measuring VSWR
- GNU Radio Toolkit
- FPGA Logic Elements for Custom T&M applications
- Reconfigurable Form Factor
- Customizable independent channel counts

## TEST & MEASUREMENT APPLICATION BLOCK DIAGRAM



## EVALUATION REQUIREMENTS

Get started quickly with our COTS solutions and have us work with you to determine if there are any changes you need made to meet your overall objectives. This will allow you to use one of our stock products with a host system and UHD compatibility to demonstrate proof of concepts (POCs) and reduce overall risks associated with your projects.

## PRODUCTION CAPABILITIES

After the product has been integrated into your system, we offer full support through the lifetime of your project to ensure changes are not required. We guarantee performance with standard factory test reports and customer specified reports. Per Vices scales low, medium, and high volume capabilities to match the size of your project.

Our build-your-own SDR tool allows you select from a wide range of features and certifications. The tool will also provide a rough order of magnitude (ROM) estimate. For more information or if you have more niche requirements, contact us directly and we'll help you out.

## CONTACT US

More information is available at [www.pervices.com](http://www.pervices.com).  
If you have any questions, please contact us at  
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