New Product!

AVIONICS INTERFACE TECHNOLOGIES
A Teradyne Company

UXI-429

8 or 16 Channel High Performance ARINC 429 Test Instrument for USB & Ethernet

OVERVIEW

The UXI-429 is the newest member of AIT's family of instruments offering full function test, simulation, monitoring and databus analyzer functions for ARINC 429 applications.

AIT's UXI-429 is the most flexible and high performance instrument of it's class in the avionics test and simulation industry. It provides support for both USB 3 and Ethernet (10/100/1000) connectivity to the host system and can also be powered from either it's USB or Ethernet (POE) interface.

The UXI-429 combines a simple and reliable FPGA based hardware architecture with a flexible software platform that provides the highest data throughput performance in the industry. The instrument has ample capacity to support high data volumes and complex avionics data simulations while simultaneously monitoring and logging received data. Additionally, the output amplitude and DC offset of the ARINC 429 signal can be set in software along with the bit rate for all output (Tx) channels.

UXI-429 Instrument

COMPREHENSIVE SOFTWARE SUPPORT

The UXI-429 instrument is supported by AIT's ARINC 429 Software Development Kit (SDK) for Windows and Linux. The ARINC 429 SDK provides multiple application interfaces including support for C/C++, C#, and VB.NET. High-level LabVIEW Virtual Instruments (VIs) are also provided. The ARINC 429 SDK provides for simple and intuitive application software development and is backed up by AIT's industry leading team of applications support engineers.

AIT's advanced analyzer and simulation software application, Flight Simulyzer™, is optionally available for use with the new UXI-429.

The UXI-429 also includes an onboard applications support processor which allows for time critical applications specific functions to be handled onboard the instrument. The full ARINC 429 C API is accessible for use by applications running onboard the instrument. Onboard, non-volatile storage is provided to store applications specific executable code.

FLEXIBLE SYNCHRONIZATION & DIO

The UXI-429 provides a high resolution onboard clock used for timestamping captured data and for precise scheduling of ARINC 429 label transmission. The instrument can be synchronized to either an input IRIG-B or IEEE-1588 master time source. The instrument can also act as an IRIG-B time source. Additionally, 10 DIOs (5 Input/5 Output) are provided to coordinate operations with external systems.

KEY FEATURES

- 8 Channel (4Tx/4Rx) & 16 Channel (8 Tx/8 Rx) models available
- Programmable Tx channel output amplitude
- Programmable high/low speed operation
- Concurrent operation of all Tx/Rx channels at high speed rates
- Full error injection & detection
- Rate-oriented label transmission
- Label selective trigger for capture/filtering
- Real-time recording & post analysis of multiple channels
- Physical Bus Replay
- Onboard IRIG-B time code encoder/decoder for Synchronization
- Time Synchronization to IEEE 1588 via Ethernet LAN port
- 10 Discrete I/O Interfaces (5 Outputs / 5 Inputs)

UXI-429 Operated from Laptop PC

Advanced Features & Functionality to Support the Most Demanding ARINC 429 Test, Simulation, & Data Acquisition Applications

TRANSMIT CHANNEL OPERATIONS

- AIT's UXI-429 provides real-time simulation of up to 8 ARINC 429 transmitter channels concurrently.
- Tx channel amplitude may be programmed on a per channel basis, 0v to 16.38v.
- Bit transmission rates are selectable for each channel. Both the 12.5 kbits/sec and 100 kbits/sec transmit modes are supported.
- Associated signal rise and fall times comply with the ARINC 429 electrical specification.
- Rate-oriented, block, and acyclic label transmission modes support all simulation needs.
- Error injection for each label transfer: short gap, parity, bit count, coding.
- Programmable gap between labels.

RECEIVER CHANNEL OPERATIONS

- The UXI-429 provides real-time simulation of up to 8 ARINC 429 receiver channels concurrently.
- Label/SDI selective receive, sequential receive modes.
- Multi-buffering with real-time data buffer updates.
- Triggering and filtering capabilities:
  - Upper and lower limit check.
  - Trigger on specific or any error.
  - Label contents and sequence-dependent trigger.
  - Filter for label and label data contents.
  - Interrupt for selected labels and label data contents.

PHYSICAL BUS REPLAY

The UXI-429 module can replay previously recorded ARINC 429 data traffic physically to the bus with the same timing accuracy. Recorded data files may be selected for physical bus replay in order to perform systems integration and testing.

SOFTWARE SUPPORT

The UXI-429 module is delivered with AIT's ARINC 429 Software Development Kit (SDK), which includes software driver support for Windows and Linux. The SDK provides multiple application interfaces including support for C/C++, C#, and LabVIEW VIs. The UXI-429 can also optionally be used with AIT's Flight Simulyzer analyzer and simulator application.

ORDERING INFORMATION

UXI-429-4T4R
4 Transmit, 4 Receive channel ARINC 429 instrument. USB 3 & 10/100/1000 Ethernet LAN Host Interface. IRIG-B & IEEE-1588 Time Synchronization. 5 DIO Inputs, 5 DIO Outputs.

UXI-429-8T8R
8 Transmit, 8 Receive channel ARINC 429 instrument. USB 3 & 10/100/1000 Ethernet LAN Host Interface. IRIG-B & IEEE-1588 Time Synchronization. 5 DIO Inputs, 5 DIO Outputs.

TECHNICAL SPECIFICATIONS

System Interface	USB2.0/USB3.0/USB3.1 Gen 1/USB3.2 Gen 1x1 (USB-C Connector) 10/100/1000 BASE-T Ethernet LAN
Memory/Storage	4GB RAM (For On Board Processing System) 8GB Non-Volatile Storage
Encoder/Decoder	Integrated ARINC 429 line transmitter/receivers, independently selectable data bit rates. Tx channels independently programmable for 0-to-1 signal swing between 0V - 16.38V. DC offset 0V - 4.095V
Time Tagging	Absolute time tagging with 1 µSec resolution, 46 bits
General Purpose I/O	5 Input and 5 Output, software programmable I/O lines supporting up to 30V signaling with external reference
Connectors	USB-C, Ethernet RJ45 Socket 68-pin VHDCI (ARINC 429, DIO, IRIG I/O) Note: VHDCI to D-SUB Adapter cable optionally available
Dimensions	15.5cm X 8.5cm X 2.5cm 6.1in X 3.35in X 0.98in
Power Input	PoE+ or USB-PD
Power Consumption	TBD
Operating Temp.	-40° C...+70° C ambient
Storage Temperature	-40° C...+85° C ambient
Humidity	0 to 95% non condensing

UXI-429 Rear Panel

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