



YED/A429-R4-T4/USB USB to ARINC 429/575 Interface

The **YED-A429-R4-T4/USB** adapter comprises of four transmitter and four receiver ARINC 429 channels.

This rugged interface is designed to provide users with an easy-to-use full function ARINC 429 interface enabling the user to communicate with, simulate, test and monitor ARINC 429 equipment and systems via their Desktop or Laptop computer.

The adapter is suitable for use in the lab and in the field and supports maximum data throughput on all ARINC 429 channels. All power is derived from a single standard USB port and features Plug-and-Play and Hot Swap capability.



Hardware

All of the processing of the USB message protocol, scheduling of transmitted ARINC 429 data, error checking, buffering of received data and time stamping is taken care of by the hardware, which comprises of our time proven proprietary FPGA. This allows the PC software to focus on providing a high performance interface to the user.

The **YED-A429-R4-T4/USB** adapter can operate in either Direct or Buffered Table modes for both transmit and receive on a channel by channel basis.

Direct Mode would usually be used by OEM's writing their own application software and will allow ARINC 429 data to be sent from the host PC to the adapter resulting in the immediate transmission of ARINC 429 on to the specified ARINC 429 databus. The same applies in reverse with received ARINC 429 data being immediately sent to the host. No filtering or scheduling takes place in this mode. Direct mode is ideally suited to performing block transfers of data such as way points and map data.

Buffered (scheduled) Table mode can also be used by OEM's and it is the mode that we use for our **Y-SIM 429** Windows Simulation and Test software. In this mode the host sets up a table of ARINC 429 data to be transmitted and/or received (filtered).

ARINC 429 Interface	
✈	4 x ARINC 429/575 Tx channels
✈	4 x ARINC 429/575 Rx channels
✈	12.5 / 50 / 100 kbps bit rates
✈	Rx Time Stamp of 100uS / 24-bit
✈	Autonomous cyclic transmit scheduling
✈	Automatic bit rate detection.
✈	Opt isolator inputs
✈	Dynamic update of Tx data
✈	25-way Micro D connector
Resources	
✈	72MHz 16-bit Cortex M3 processor
✈	USB 2.0
✈	FLASH upgradable firmware
Physical	
✈	Operating Temp -20°C to + 70°C
✈	Size: 107 x 71 x 18 mm aluminium enclosure.
✈	Weight: 160g
✈	Up to 5m USB cable
Power Consumption	
✈	USB powered, +5V @ 300mA

ARINC 429 scheduled transmission comprises of the standard minor and major frame type cyclic transmissions found in ARINC 429 today. These transmission intervals can be from 10mS up to 1.28S intervals.

For ARINC 429 reception, received data is compared with uploaded filter tables and if the criteria matches the data it is then transmitted to the host.

In addition to filtering the data, received data can also be sampled by the hardware prior to passing it to the host PC. This can be used to decrease the frequency of specific ARINC 429 labels from being sent to the host, thus reducing the amount of data being received by the host.

The receivers automatically adapt to the incoming bits rates for high (100 kbps), Medium (50 kbps) or low (12.5kbps) speed data.

ARINC 429 Parity is checked automatically for ODD parity on receive and calculated by the FPGA to be ODD parity on transmit. The adapter can be programmed to set a channel to either ODD, EVEN or NO PARITY – the latter meaning that Bit-32 is available for use by the user.

Software

Two software options are available to users:-

1. Develop your own software applications using our YED API and with a few simple function calls the hardware can be up and running and processing messages to and from the ARINC 429 data buses. Function calls include routines for transmitting, updating transmit data values, scheduling, receiving, filtering, recording, time-stamping, etc.

2. Use our proprietary **Y-SIM 429** easy to use Windows Simulation and Test software. **Y-SIM 429** simplifies project development and provides added productivity through virtual instrument displays, chart displays, dynamic ramping data on transmit, flexible monitoring, data capture and analysis. In addition, captured data can also be replayed back out on to the chosen ARINC 429 data buses for a variety of test and diagnostic scenarios.

All the usual features that you would expect are available including Standard and Custom ARINC 429 Engineering units as well as the ability to save multiple test configurations to disk for use with different projects.

Software

- ✈ API for OEM's
- ✈ **Y-SIM 429** Windows Simulation and test software available
- ✈ User definable data definitions
- ✈ Engineering units definitions
- ✈ Recording and Playback of data
- ✈ Custom firmware and software

