



Avionics Databus  
Solutions

# ASC429-x

USB SmartCable™  
for ARINC429  
Test & Simulation

Data  
Sheet



Picture: ASC429-x

# ASC429-x

## USB SmartCable™ for ARINC429 Test & Simulation

### General Features

The ASC429-x (AIM SmartCable™) USB module offers full function test, simulation, monitoring and databus analyser capabilities for ARINC429 applications and is available in configurations with 2Tx/4Rx (6 Channels) and 4Tx/8Rx (12 Channels).

ASC429-x modules are powered from the host computer via the single USB2.0 (or higher) connection – no external power adapter is required. Designed in a connector housing size, the ASC429-x supports up to 8 discrete input/output signals to be monitored or generated.

An onboard high-precision ‘free wheeling’ IRIG-B time encoder/decoder allows users to accurately synchronise single or multiple ASC429-x modules to a common time source.

The optional PBA.pro™ Databus Test & Analysis Tool (for Windows & Linux) as well as the EasyLOAD-429/EasyDLE ARINC615 DataLoader Software are compatible to the ASC429-x.

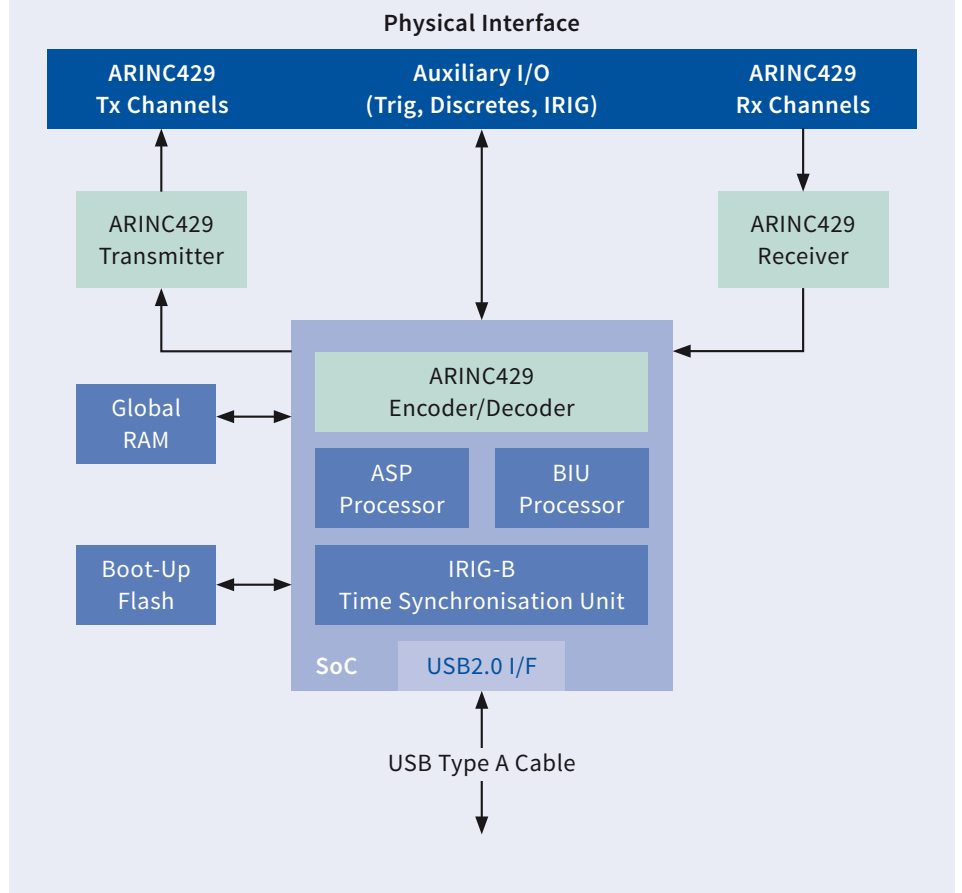
A common Application Programming Interface (API) supports all AIM ARINC429 modules.

### Key Features

- Robust and Low Power USB2.0 Module with up to 12 ARINC429 Channels
- Powered via single USB2.0 (or higher), no external power adapter required
- Hot Plug Capability
- Ruggedised 37-pin female D-SUB Connector
- 6 Channels (2Tx/4Rx) and 12 Channels (4Tx/8Rx) Versions
- Concurrent Operation for Simulation/Monitoring on all Channels
- Full Error Injection/Detection Capability
- Multi Level Triggering for Capturing/Filtering
- IRIG-B Time Encoder/Decoder for Data Correlation
- Real Time Recording and synchronised Bus Replay
- 8 bi-directional Discrete-I/O Signals
- Drivers for 32/64-bit Linux and 32/64-bit Windows7/8/8.1/10
- Compatible with PBA.pro™ and EasyLOAD-429/EasyDLE Application Software
- Software compatible with AIM’s Family of ARINC429 Cards



## ASC429-x Block Diagram



### Transmit Channel Operation

- Cyclic/Acyclic Label Transmission and Channel Loop Mode
- Error Injection for each Label Transfer: Short Gap, Parity, Bit Count, Coding
- Programmable Gap between Labels: 0 to 255 Bit
- Simulate Zero-Jitter Scenarios using Virtual Label Transfers
- Multi-Buffering with Real Time Update supported per individual Label Transfer
- Reconstruction of previously recorded ARINC429 Traffic physically to the Bus with excellent Timing Accuracy (Physical Replay)
- Notification on Label Transmit (configurable per Label Transfer)

### Receive Channel Operation

- Label Oriented Receive Mode (individual Buffers for each Label with Multi-Buffering and Real Time Updates)
- Chronological Receive Mode per Channel with 1µs Resolution Time Stamping
- Chronological Mode concurrent to Label Oriented Receive Mode
- Local Monitoring (individual Buffer per Channel) or Global Monitoring (common Buffer for all Channels)
- Continuous or Single Shot Capturing Modes
- Support of SDI Handling
- Notification on Label Reception (configurable per Label/SDI)
- Complex Triggering and Filtering Functions
- Loop of received Data to configurable Transmit Channel with Label Data Modification Capability

### Physical Bus Interface

The ASC429-x Modules have integrated ARINC429 Line Transmitter/Receiver Channels and selectable Transmission Rate for each Single Channel independently

### IRIG-B Time Encoder/Decoder

- Onboard, free wheeling IRIG-B Time Encoder/Decoder with amplitude modulated sinusoidal Output
- Synchronise with multiple AIM Modules or any IRIG-B compatible Module

### Discrete & Trigger I/O

- 8 bi-directional Discrete-I/O Signals
- 1 Trigger Input
- 1 Trigger Output

### Driver Software Support

- C/C++ Application Programming Interface (API) 32/64-bit, .NET Assemblies, LabView VI's
- Drivers for 32/64-bit LINUX and 32/64-bit Windows7/8/8.1/10

## Technical Data

### USB2.0 Interface

480Mbit USB2.0 Standard Interface  
(Revision 2.0)

### Memory

128MB RAM

### Processor

SoC Device with 2x 400 MHz Processors

### Time Tagging

46-bit absolute IRIG-B Time

### Discrete I/O

8 bi-directional Discrete-I/O Signals

### Trigger I/O

1 Trigger Input and 1 Trigger Output Line,  
TTL compatible

### Physical Bus Interface

2 or 4 ARINC429 Transmitter;  
4 or 8 ARINC429 Receiver

### ARINC and Auxiliary Connector

37-pin D-Sub Connector for ARINC429 Tx/Rx  
and Discrete-I/O, IRIG-B and Trigger Signals

### USB-Connection

fixed mounted cable with single  
USB Type A host Connector – other  
Connectors on request

### Dimensions

75mm x 65mm x 16mm (W x L x H)  
(Housing incl. D-Sub I/O-Connector)

### Supply Voltage

+5V from single USB2.0 (or higher) Supply  
Voltage

### Power Consumption

2.5W max

### Operating Temp. Range

Standard: 0°C to +50°C ambient  
Extended: -15°C to +60°C

### Storage Temp. Range

-40°C to +85°C

### Humidity

5 up to 95% (non-condensing)

## Ordering Information

### ASC429-6

2 Channel Transmitter/4 Channel  
Receiver USB2.0 to ARINC429 Interface:  
Including IRIG-B Time Encoder/Decoder,  
8 General Purpose Discrete-I/O's,  
1x Trigger In, 1x Trigger Out, 128MB RAM  
Including USB Cable (1m),  
USB Type A Connector host side,  
fixed on housing side  
Includes Driver Software for 32/64-bit  
LINUX and 32/64-bit Windows7/8/8.1/10

### ASC429-12

4 Channel Transmitter/8 Channel  
Receiver USB2.0 to ARINC429 Interface:  
Including IRIG-B Time Encoder/Decoder  
and 8 General Purpose Discrete-I/O's,  
1x Trigger In, 1x Trigger Out, 128MB RAM  
Including USB Cable (1m),  
USB Type A Connector host side,  
fixed on housing side  
Includes Driver Software for 32/64-bit  
LINUX and 32/64-bit Windows7/8/8.1/10

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