USB 708
ARINC 708 Interfaces

Features

Up to 4 ARINC 708 Channels
8 Avionics Discrete I/O
IRIG A/B PWM and AM
USB 2.0 Bus Powered
32 MB Data Memory
Small, Portable, and Rugged

USB Interfaces to ARINC 708/453

The USB 708 family of pocket-sized USB adapters enable computers to interface with ARINC 708 and similar weather radar display databuses. These rugged USB 2.0 peripherals feature extensive functionality for testing and simulating weather radar systems, CDUs (Control-Display Units), and T-R (Transmit-Receive) units. They are used for monitoring, generating, recording, and playing back data. The ARINC 708 display databus is sometimes referred to as ARINC 453.

These versatile interfaces are suitable for a wide range of applications in the lab and in the field, and are compatible with virtually all modern PC laptop, desktop, and tablet computers. They support maximum data throughput on all 708 channels and have a large 32 MB built-in memory. All power necessary for operation is provided via the single USB port. Plug and Play and Hot Swap features make them easy to install and move between computers.

Hardware

Models are available with one receive and one transmit channel (1R1T) or with two receive and two transmit channels (2R2T). They support simultaneous operation on all available channels and provide software-selectable word lengths and pre-sync pulses for custom protocols that deviate from ARINC 708. All include eight avionics level input/output discretes and IRIG time synchronization/generation. Once configured, the USB hardware performs all the protocol processing. It manages the reception, transmission, error checking, time-tagging and buffering of messages—freeing user software to focus on high-level application-specific processing.

Software

Users can develop their own software applications with the included BTIDriver API. With only a few function calls, a program can operate the USB hardware and process messages to and from the avionics databuses. Functions include routines for transmitting, receiving, scheduling, recording, time-tagging, and manipulating data. With BTIDriver, application code migrates seamlessly to and from other Ballard devices, reducing development time and costs.

Ballard's optional CoPilot software provides easy-to-use, interactive tools for ARINC 708 test, analysis, and simulation. CoPilot simplifies project development and provides added productivity through a virtual weather radar display, flexible monitoring and analysis tools, and a powerful scripting engine. Special bundled pricing is available when ordering CoPilot along with the USB interface hardware.

ARINC 708

- Supports standard ARINC 708 and custom weather radar databuses
- Receive, Transmit, and Monitor
- Models available: 1R1T and 2R2T
- Direct coupled channels per 708
- Strappable on-board termination
- LEDs indicate bus traffic and errors

Software

- Universal BTIDriver™ API compatible
- Efficient DMA monitoring
- Compatible with other Ballard hardware
- CoPilot® software (optional)

Benefits

- Small, lightweight, and rugged
- Portable, versatile, and durable
- Easy Plug and Play installation
- No external power supply needed
- Powerful protocol engine
- Secure locking connectors
- Free customer support for product life
- 3-year limited warranty standard
- FCC, CE and RoHS compliant

Applications

- Weather radar, CDU, and T-R unit analysis, test, and simulation
- Flightline and AOG support
- In the lab or in the field
- Replace plug-in cards

USB 708
ARINC 708 Interfaces

ARINC 708 Features

General

Standard ARINC 708 data
  Syncs – beginning and ending
  1600 bits per word
    64-bit header
    512 3-bit range bins
Custom data options
  Pre-sync pulses
  Variable word length
    1 to 1856 bits per word
Configurable bit order
  LSB or MSB first
Strappable bus termination
ARINC 453 characteristics

ARINC 708 Receive Channels

Wide frequency tolerance
Message record includes: data, bit-count, time-tag, channel number, detected errors
Error detection and logging
  Sync
  Manchester
  Long word
  Short word

ARINC 708 Transmit Channels

Configurable transmit repetition rate
Multiple message frames
Flexible frame triggering
Playback from file

Sequential Monitor

A sequential record of selected activity
Record all or selected card activity
Includes 708 and discrete data, channel, errors, and time-tag.
Filter by channel
Efficient DMA monitor pipe to host

Other Features

Base Configuration

- Model dependent 708 capability
- USB 2.0 interface
- 8 Avionics Discrete I/O
- IRIG A/B input and output
- 2 LED indicators
- 32 MB on-board memory

708 Channel Details

Internal self-test bus
Each channel switchable between 2 buses
Receive and transmit concurrently

Avionics Discrete I/O

8 programmable inputs/outputs
Can be used as syncs and triggers
Output: Open/Gnd, 35 VDC, 200 mA (max), self monitoring, inductive load protected
Log transitions to sequential record

Time-tag/IRIG

48-bit hardware time-tag (1µs resolution)
IRIG A or B, AM (input), PWM and PPS
  Generate or synchronize
  Synchronize hardware time-tags

Interrupts/Logging

Poll or use interrupts
Configurable event log
Programmable event logging/interrupts from messages, schedules, and buffers

Specifications

Component temperature: -40 to +85 deg C
Storage temperature: -55 to +100 deg C
I/O Connector: HD44F D-Sub
Dim: 3.0 x 4.45 x 0.97 in (76 x 113 x 25 mm)
Weight: under 5 oz (140 g)
Power: Single USB Port
MTBF: 1,500,000 hours

Software

Universal BTIDriver API for C/C++, C#, VB, VB.Net, and LabVIEW™
Windows®, Linux® and Solaris OS drivers
CoPilot analysis and test software (optional)
Call for latest language and OS support.

Ordering Information

*Hardware & CoPilot**	*Hardware Only*	*Number of Channels*
CP-UA1720	UA1720	2R2T
CP-UA1710	UA1710	1R1T

**Includes CoPilot analysis & test software*
nRnT = number of Receive/Transmit channels

Options

To order, add the appropriate suffix to the above part number. Example: **UA1720/NE**

/FTO	Flight Test Orange case (black case is standard)
/NE	No Enclosure, Printed Circuit Board Assembly only, for embedded use
/FXY	Conformal coating (Parylene)

Accessories (Included*)

USB cable with screw-locks (5 ft)
Mating HD44P D-Sub I/O connector
Manuals and software CD
**Except models with "/NE" option*

Complimentary Products

USB ARINC 429 adapters (UA14xx)
Use to test, analyze, and simulate the weather radar control databus.

Astronics Ballard Technology
11400 Airport Road
Everett, WA 98204 USA
Phone: +1.425.339.0281 800.829.1553
E-mail: sales@ballardtech.com
www.ballardtech.com

Ballard Technology is committed to quality and is AS9100 and ISO 9001 registered.

ASTRONICS BALLARD TECHNOLOGY