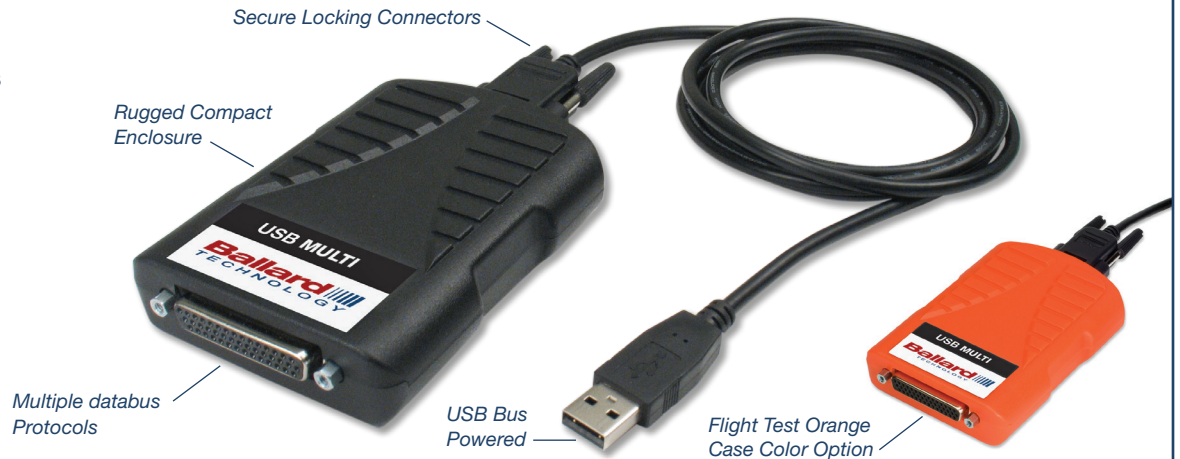


# USB MULTI

## Multi-Protocol Interfaces

### Available Protocols

- MIL-STD-1553
- EBR 1553
- ARINC 429
- ARINC 708
- ARINC 717
- Serial
- Discrete I/O



### USB Interfaces to multiple simultaneous avionics protocols

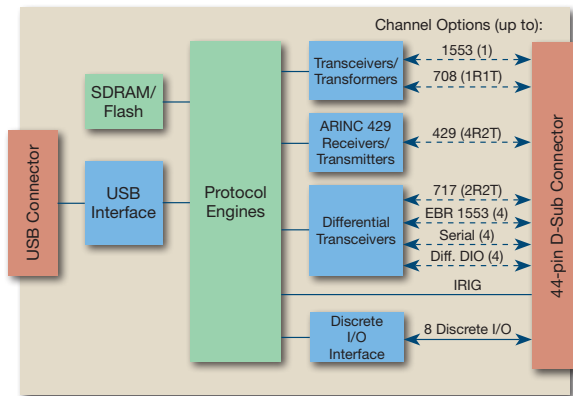
The USB MULTI family of pocket-sized USB adapters enable computers to communicate with, simulate, test, and monitor avionics equipment and systems. These rugged USB 2.0 peripherals feature a combination of different protocols in a single device. This provides greater convenience and cost savings when interfacing to multiple databus types. They are compatible with virtually all modern PC laptop, desktop, and tablet computers, and 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.

### Software

Ballard's full-featured CoPilot Software provides easy and powerful tools for taking full advantage of the USB MULTI interface. Alternatively, 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.

CoPilot software, available as an option, provides easy-to-use, interactive tools for databus test, analysis, and simulation. CoPilot simplifies project development and provides added productivity through virtual instrument displays, flexible monitoring and analysis tools, and a powerful scripting engine. Special bundled pricing is available when ordering CoPilot along with the USB interface hardware.



USB Multi-Protocol Interface Block Diagram

### Features

- Interface USB to Multiple Avionics Databus Protocols with a Single Unit
- 8 Avionics Discrete I/O
- IRIG A/B PWM and AM
- USB 2.0 Bus Powered
- 32 MB Data Memory
- Small, Portable, and Rugged

### Software

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

### Benefits

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

### Applications

- Analysis, test, and simulation
- Data loading
- Flightline and AOG support
- In the lab or in the field
- Replace plug-in cards

# USB MULTI Multi-Protocol Interfaces

## Available Interfaces

### MIL-STD-1553

1 dual-redundant channel  
BC/RT/MON (Single- or Multi-Function)  
Hardware controlled transmit scheduling  
CH/TA/SA filtering  
Sequential monitor

### ARINC 429/575

6 channels (4R2T)  
Periodic and asynchronous messages  
Hardware controlled transmit scheduling  
Receive message filtering (Label/SDI)  
Sequential monitor

### ARINC 708/453

2 channels (1R1T)  
Hardware controlled transmit scheduling  
Receive message filtering  
Sequential monitor

### ARINC 717/573

4 channels (2R2T)  
Biphase/Bipolar  
Transmit and receive  
Sub-frame and super-frame support  
64, 128, 256, 512, 1024, 2048, 4096, 8192 wps  
Sequential monitor

### Differential Discretes

Up to 4 Differential Discrete I/O

### EBR 1553 (SAE AS5652)

Up to 4 ports (1 channel)  
BC/RT/MON (Multi-Function)  
Hardware controlled transmit scheduling  
CH/TA/SA filtering  
Sequential monitor

### RS-422/485 Serial

Up to 4 ports  
Contact factory for availability

## Higher Channel Counts

Single-protocol USB interfaces are available with higher individual channel counts. Visit [www.ballardtech.com/USB](http://www.ballardtech.com/USB)

## Specifications

### Base Model Features

- Model dependent protocol capability
- USB 2.0 interface
- 8 Avionics Discrete I/O
- Up to 4 Differential Discrete I/O
- IRIG A/B input and output
- 32 MB on-board memory

### 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, PWM, and PPS modes  
Generate or synchronize (AM input only)  
Synchronize hardware time-tags

### Environmental/Mechanical

Component temperature: -40 to +85 deg C  
Storage temperature: -55 to +100 deg C  
Dim: 3.0 x 4.45 x 0.97 in (76 x 113 x 25 mm)  
Weight: under 5 oz (140 g)

### Connector/Electrical

I/O Connector: HD44F D-Sub  
Power: Single USB port  
MTBF: 1,400,000 hours

### Software

Universal BTIDriver API for C/C++, C#, VB,  
VB.Net, and LabVIEW™  
MS Windows® and Linux® OS drivers  
Translation DLLs for older Ballard devices  
CoPilot analysis and test software (optional)  
*Call for latest language and OS support.*

## Ordering Information

### Protocol Key

**A = MIL-STD-1553** (B: Bus Monitor,  
S: Single-function, M: Multi-function)  
**B = ARINC 429** (4R2T)  
**C = ARINC 708** (1R1T)  
**D = ARINC 717** (2R2T)  
**E = EBR 1553** (4 ports)  
**F = Serial\*** (4 ports)

\* Contact factory for availability

Hardware & CoPilot**	Hardware Only	Protocols					
		A	B	C	D	E	F
CP-UA1503	UA1503	-	X	-	-	-	X
CP-UA1505	UA1505	-	-	-	-	X	-
CP-UA1511	UA1511	B	X	-	-	-	-
CP-UA1512	UA1512	B	X	-	X	-	-
CP-UA1513	UA1513	B	X	-	-	-	X
CP-UA1514	UA1514	B	-	-	-	-	X
CP-UA1515	UA1515	B	-	-	-	X	-
CP-UA1521	UA1521	S	X	-	-	-	-
CP-UA1522	UA1522	S	X	-	X	-	-
CP-UA1523	UA1523	S	X	-	-	-	X
CP-UA1524	UA1524	S	-	-	-	-	X
CP-UA1525	UA1525	S	-	-	-	X	-
CP-UA1531	UA1531	M	X	-	-	-	-
CP-UA1532	UA1532	M	X	-	X	-	-
CP-UA1533	UA1533	M	X	-	-	-	X
CP-UA1534	UA1534	M	-	-	-	-	X
CP-UA1535	UA1535	M	-	-	-	X	-
CP-UA1571	UA1571	-	X	X	-	-	-
CP-UA1572	UA1572	-	X	X	X	-	-
CP-UA1573	UA1573	-	X	X	-	-	X
CP-UA1574	UA1574	-	-	X	-	-	X

\*\*Includes CoPilot analysis & test software

### Options

To order, add the appropriate suffix to the above part number. Example: **UA1532/NE**

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

### Accessories (Included\*)

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

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