The missing link: MIL-STD-1553 to Gigabit Ethernet

The conflict between the needs of the military for network-centred communication and the current situation where the vast majority of basic military equipment interconnects via MIL-STD-1553 can be easily resolved by the use of 'network bridges'. These are now available from MBS Electronic Systems, Germany, which offers autonomous connectivity between MIL-STD-1553 and Full Duplex Gigabit Ethernet. This FPGA-based standalone module is one of a family of Gigabit Ethernet interface modules, referred to as ÆSyBus modules, which provide a low-latency connection to a range of military and aerospace databuses using UDP/IP protocol. The open source nature of this solution, combining Ethernet and UDP/IP protocol, enables these devices to be easily accessed by any networked computer and operating system, without the need of any additional drivers or software infrastructure. Furthermore, these devices can be accessed simultaneously by up to 10 separate computers, which can individually log on to the module, configure and control its resources and automatically receive status and data messages, periodically or as needed.

The MIL-STD-1553 ÆSyBus Module can be configured to operate as a bus controller, remote terminal, or passive monitor. In all cases, terminal/bus status is collected with receive data for automatic transfer to the applications, in accordance with the configured requirements of the user. A configurable hardware scheduler is also provided for accurate scheduling commands, when operating as a bus controller. The modules are available in a robust conduction-cooled enclosure, with build options to meet various environmental conditions, or as interface cards which slot into a VME I/O-type enclosure.

With a view to platform independence and to minimizing system development time, the API and all example software are provided in source code.

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