

CONTROL, MONITOR & SIMULATE THE DATA BUS

The MIL-1553 Front End is an EGSE unit to control, monitor and simulate flight equipment on the satellite onboard data handling bus during the spacecraft development, assembly, integration and test (AIT) phases.

In a typical application, the MIL-1553 Front End is used as Bus Controller (BC) to test one (or multiple) Remote Terminals (RTs), by simulating the spacecraft specific MIL-1553 protocol, including TM/TC transfer mechanisms. With a different software configuration, the same hardware can be used to simulate up to 31 Remote Terminals.



The system consists of a 19" 2U hardware platform, connected to the C-STS Control and Monitoring Software (CMS). The system is used as a desktop connected with a standard PC or integrated into a 19" rack.

KEY FEATURES

General

- Supporting multiple MIL-1553B functions in a single platform;
- Bus Controller
- Remote Terminal (simulator)
- Bus Monitor
- LAN for Control and Monitoring via TCP/IP (using RJ45)
- External Time/Reference inputs, such as 10MHz, PPS and IRIG
- PPS input for synchronisation to external equipment

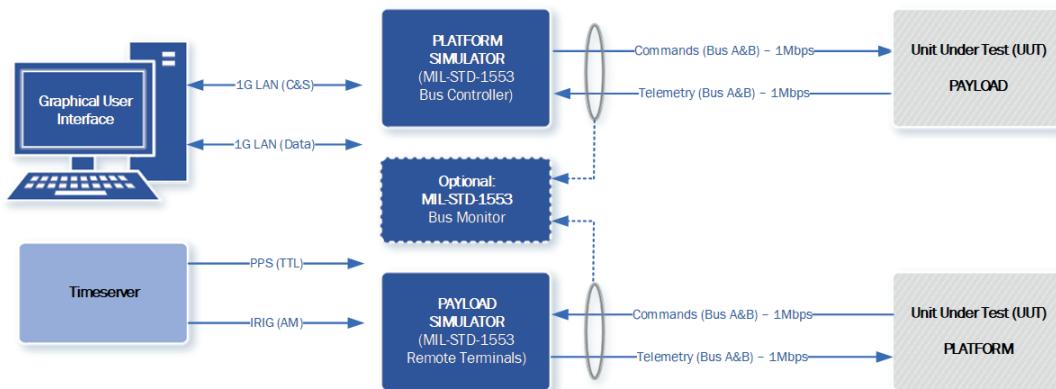
MIL-STD-1553B Channels

- Up to Four Independent, Dual Redundant MIL-STD-1553 Channels
- Fully Compliant to MIL-STD-1553B Notice II/IV
- Advanced 32-bit BC, RT and Monitor FPGA Design - Full 32 bit Memory
- BC Framing/Subframing/Aperiodic
- IRIG-B or PPS External Clock

Advanced GUI and software functions

- Software design for spacecraft and instrument testing and debugging
- Flexible Polling Sequence Table structure for BC allowing simple adaptation of bus profile
- Error Injection mechanisms for BC and RT
- Error Detection mechanisms
- Bus monitoring with filtering, triggers, error detection and capture to disk up to 100E6 messages.
- Custom color coding and decoding plug-in to bus monitor

MIL-STD-1553 FRONT END



The MIL-1553 Front-End can be configured to act as: Bus Controller, Bus Monitor or Remote Terminal Simulator.

Bus Controller (BC)

The MIL-1553 Front End offers a flexible BC function with the purpose to simulate the operations of the S/C On-Board Computer. An implemented periodic, deterministic MIL-Bus scheduler supports synchronous and asynchronous MIL-1553 transfers. The MIL-1553 major and minor frame bus timing can be synchronised to an external signal and is highly, configurable taking into account the satellite specific message slot timing.

Bus Monitor (BM)

The fully independent BM function with dedicated GUI supports redundant bus connections (Bus A & Bus B). Sophisticated filters trigger on, and capture specific bus conditions. The MIL-1553 Front End performs near real-time traffic analysis in parallel with continuous storing of all MIL-1553 data to disk (archive including time-stamps). An optional project specific decoder DLL is available to support textual decodes and user defined colour schemes to simplify the MIL-1553 data analysis

Remote Terminal (RT) Simulator

The RT Simulator uses a dedicated, dual redundant channel to simulate up to 31 MIL-1553 RTs. The operations of the simulated RTs are based on standard, user defined, text files that describe the behaviour for each RT independently. The RT functions include; RT Enable/Disable, Bus A/B switching, programmable 'RT-response time', user programmable mode code responses, and bit-based Status and Data Word corruption.

ENVIRONMENTAL AND PHYSICAL SPECIFICATIONS

Dimensions	H x W x D 133 x 448 x 443 mm
Weight	< 6 kg
Input Power Range	100-240VAC 50-60Hz
Operating Temperature Range	+10°C to +40°C
Operating Humidity	30% to 85% (non-condensing)
Storage Temperature	-20°C to +60°C
Storage Humidity	Up to 85% (non-condensing)

