

iSAFT 1553 Simulator / Recorder Compact System



The iSAFT MIL-STD-1553 Simulator / Recorder is an advanced Data Front End with traffic generation capabilities that simulates MIL-STD-1553 devices or instruments, enabling S/C integration tests before the availability of Flight Models.

It also constitutes a high performing, modern network traffic capture, recording and analysis tool for the validation of satellite/spacecraft on-board communication protocols and data networks implementing the MIL-STD-1553 protocol family.

It provides a 1 - 4 channel MIL-STD-1553 interface with BC and multiple RT simulation and Bus Monitoring capabilities. It is capable of simulating a BC or multiple RTs over the MIL-STD-1553 buses. It is based on the iSAFT graphical tool chain, for the configuration/management of the simulation (locally or remotely). It consists a powerful device for the validation of on-board data networks at early stages, minimizing costs and schedule. It can be part of EGSE Data Front Ends and implement the core functionality of an EGSE controller.

As a Recorder, it is capable of capturing data packets on multiple MIL-STD-1553 buses, time stamping, recording, and delivering them to a powerful Protocol Analyzer for further processing & analysis. Operating on a multi-Gbytes powerful HW platform, the SW environment is based on the iSAFT graphical tool chain, thus allowing the management, filtering & searching of the recordings. It is used for troubleshooting and problem solving at various development stages, minimizing the impact on cost and schedule.

"The iSAFT 1553 Simulator / Recorder is powered by Alta Data Technologies (AltaDT) 1553 hardware modules"



Main Features & Competitive Advantages

- One to four (1-4) independent, dual redundant MIL-STD-1553 channels
- Dual Function (BC, BM or multiple RTs (1-32) and BM simultaneously) or Full Function (BC, multiple RTs and BM simultaneously)
- Complete graphical software environment for controlling and monitoring the hardware
- Support of ECSS-E-ST-50-13C services during BC and RT simulation (time distribution, communication synchronization, get/set data, data block transfer and terminal management services)
- Real-Time Statistics per channel, Integrated Wireshark Protocol Analyser
- Recordings management, export to XML, Postscript, etc.
- Software APIs in C#, C++, Python, standard Web services (Windows, Linux)
- EDEN / C&C CCSDS protocol support for communication with the Central Checkout System (CCS)
- IRIG support for time synchronization with other components in a testbed
- Expandable with additional interfaces (SpaceWire, SpaceFibre, CAN/CANOpen)
- Proven solution in multiple EGSE test benches across Europe, Japan, South Korea

Key Benefits

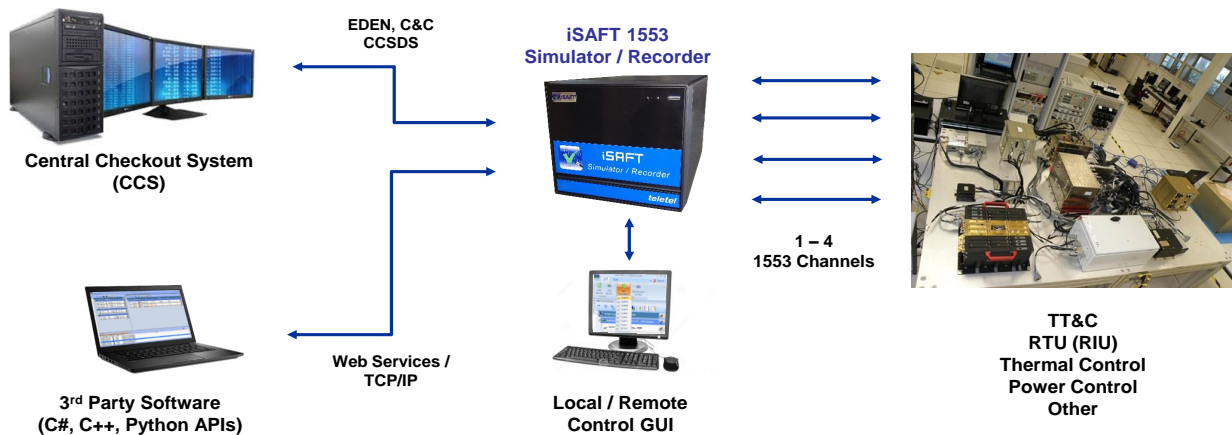
- Unique market product supporting ECSS-E-ST-50-13C extensions for the Space domain
- Modern graphical user interface with packet editors
- Powerful remote control APIs supporting rich functionalities
- 100% internal SW design, can be customised to customer needs
- First class support at both SW & HW level

Application Areas

- Design & development of on-board data networks
- Simulation / Recording / Error Injection / Traffic Generation test equipment
- EGSE / Test Benches
- Data Front Ends
- Hardware in the Loop Simulation
- Experimentation with new protocols and various protocol features



Use Case Example - Emulating OBC 1553 control



Technical Data

General	
Form factor	Compact size, mini system
Dimensions	215 x 332 x 190 mm (W x D x H)
Interfaces	2 x 1Gbps Ethernet 2 x RS-232 1 x HDMI 1.4a, 2 x DP 1.2 8 x USB 3, 2 x USB 2 optional WiFi
PCI slots	2 x PCIe (x16, x4)
CPU	Quad core i5 intel processor
Memory	16GB DDR 4
Storage	128GB SSD drive for OS 1TB HDD for data and Archive
Power supply	100-240V 500W
Operating temperature	0°C to 40°C
Storage temperature	-10°C to 60°C
Storage Humidity	10 ~ 90%
Compliances / Standards	CE, RoHS, FMEA available
Warranty	1 year (extendable)

1553 Interface	
Number of channels	1 to 4 (dual redundant)
Function	Dual Function (BC/Mon or mRT/Mon) or Full Function (BC/mRT/Mon)
Connector	68-Pin SCSI-3 or Twinax connector for each channel
Channel speed	Up to 1Mbps per channel
IP Core	AltaCore-1553 (1553B Notice II & IV compliant)
Protocols	MIL-STD-1553, ECSS-E-ST-50-13C services support
Functionalities	Simulation, Recording, Error Injection, Traffic Generation
Electrical standards	Transformer Coupling (1553B Notice II & IV compliant)

Software	
Supported OS	Windows 10 64bit
Main features (supported by a modern GUI)	Board management, Packet editors (BC Simulation), ECSS-E-ST-50-13C services support, simulation, traffic generation, recording, off-line analysis, statistics, Wireshark protocol analyzer
APIs	C#, C++, Python, standard Web services (Windows, Linux)
Optional	iSAFT EDEN or CCSDS C&C Remote Control - 1553

IRIG Interface	
Type	IRIG-B002 (DCLS)
Functionality	IRIG receiver
Electrical standards	2 - 16 Vpp, 25K input impedance
Connector	DB50 (dedicated cable is required)

Order Information

- iSAFT11.CB-05-2XX-Y (XX: 01, 02, 03, 04 channels, Y: D for "Dual Function" or F for "Full Function")

Contact

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