



The **iSAFT 1553 EGSE** is a powerful extension of the [iSAFT 1553 Front-End](#) product with a rich set of features required for its use as a 1553 Data Front-End embedded in integrated EGSEs for satellite AIT/AIV operations.

The **iSAFT 1553 EGSE** is a plug-n-play EGSE component ready to operate with CCS and other SCOE, removing the need to develop custom HW or SW interfaces. The iSAFT 1553 EGSE can also be extended with additional interfaces, such as SpaceWire, WizardLink, SpaceFibre, CAN/CANOpen, etc. It is a proven solution in several space missions over the last 10 years and can be used in several EGSEs such as:

- Payload/Instrument EGSEs
- Satellite Interface Simulators (SIS)
- Platform EGSEs (CDMS EGSE, MMU EGSE)
- Simulator Front-Ends

It supports all the features of the iSAFT 1553 Front-End product, with the additional selectable features as presented in the next sections.

Main Features

- EDEN / C&C CCSDS protocol support for communication with a Central Checkout System (CCS)
- Provision of SCOS2K compatible MIB (in text format) for direct integration to CCS
- Full command and control using SCOE TCs and TMs
- Support of routing and forwarding of S/C TCs from CCS to user defined MIL-STD-1553 ports and selected Remote Terminals (RTs) based on APIDs, using ECSS-13C Data Distribution service
- Support reception and distribution of Acquisition Data Blocks from selected Remote Terminals (RTs), using ECSS-13C Data Acquisition service, to CCS as S/C TM
- Expandable with additional interfaces (MIL-STD-1553, CAN/CANOpen, SpaceFibre, WizardLink)
- Fully certified for connection to space flight equipment (FMEA)
- Proven solution in multiple EGSE test benches across Europe, Japan, South Korea

"The iSAFT 1553 EGSE is powered by Alta Data Technologies (AltaDT) 1553 hardware modules"

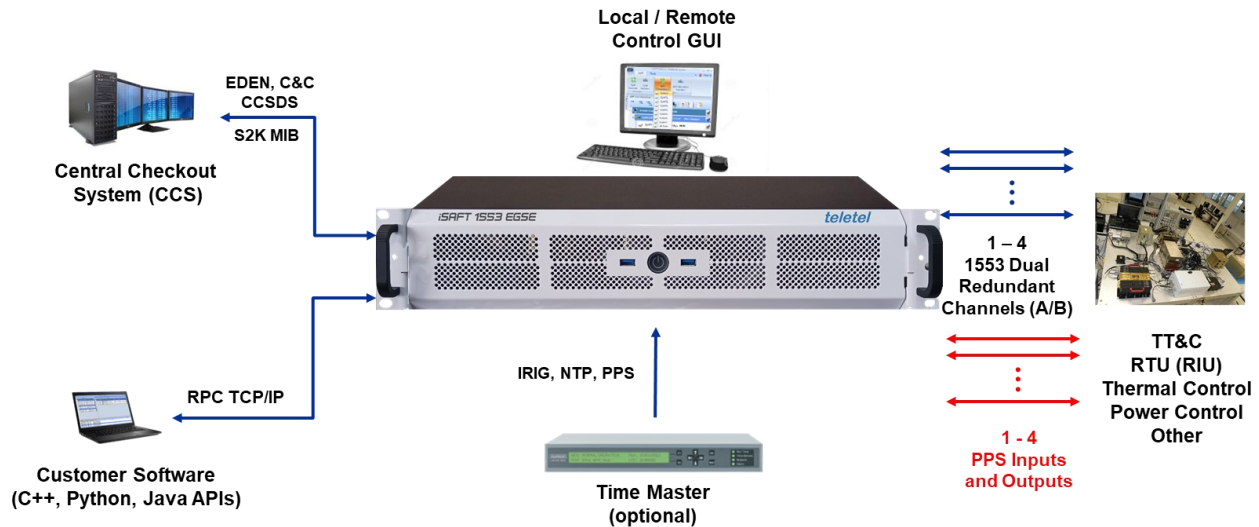
Altadt
data technologies

The iSAFT 1553 EGSE is fully modular and can be configured according to mission needs (number of 1553 interfaces, number of PPS/triggers, etc.). The system is also fully expandable in terms of features, no of interfaces, etc. by adding the required hardware and software modules.

The iSAFT 1553 EGSE builds on the heritage of the iSAFT product line (with more than 200 installations worldwide), it is developed according to ECSS standards for AIT/AIV operations and is fully compliant to general EGSE requirements from various European Space Missions.



Use Case Example - Operating as a Satellite Interface Simulator (Platform Simulator)



The iSAFT 1553 EGSE has contributed to the success of more than 15 Space missions including EUCLID, PLATO, IASI-NG, MICROCARB, Galileo 2G, Copernicus LSTM / CIMR, ARIEL, etc.

It has been extensively used to simulate the OBC and/or missing peripheral units. References include SIIS OBC simulation (ARIEL SIIS, CIMR Platform Simulator, Galileo 2G simulator, etc.), Units Simulation (PLATO CDMS Platform simulation of PCDU, ADPME, XBT, etc., GTS GDIU unit simulation, etc.)

Built-in OBC Simulation

- Transmission of S/C TCs from CCS to RTs, via ECSS-13C Data Distribution service
- Reception of S/C TMs from RTs, via ECSS-13C Data Acquisition service, and forwarding to CCS
- Time synchronization of RTs via ECSS-13C communication and time synchronization service (and PPS if required) and periodic Time messages

Units Simulation

- Fully customizable and configurable by end users
- Provided Framework in Python or other programming languages that utilizes the iSAFT Remote Access APIs
- Handling of received 1553 BC-RT commands or TCs (via ECSS-13C Data Block Distribution service) and update of RT TX SA buffers or response with TMs (e.g. TM(1,X) via ECSS-13C Data Block Acquisition service)
- Periodic transmission of TMs (e.g. HK and / or science data) via ECSS-13C Data Block Acquisition service or periodic update of RT TX SA buffers based on simulated RTs' status, HK or science data
- Asynchronous on demand update of TMs or RT TX SA buffers based on CCS command
- Default and on demand runtime configuration of the simulated RT units using configuration files
- CCS commands to start, stop, pause and continue unit or RT model simulation
- CCS commands to retrieve and change simulation configuration and perform asynchronous operations (e.g. update of selected RT SA Buffers, change simulated mode and HK parameters, etc.)
- OBT Time synchronization via reception of communication synchronization and time messages

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