Factory Ground Support Equipment (FGSE)

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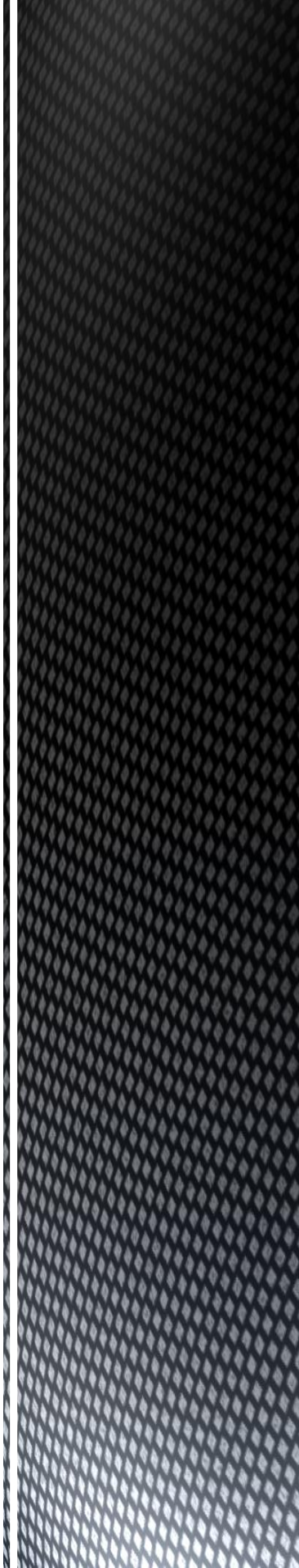


Overview

The FGSE **manages both input and output operations** by using different independent processes which make use of the **SpaceWire** drivers and libraries.

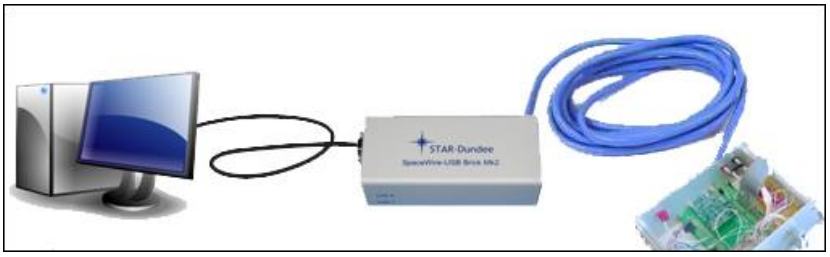
- FGSE utilizes the ESA **SCOS-2000®**: the generic mission control system software of ESA originally developed to support ESA missions.
- FGSE utilizes the **SpaceWire** standard for high-speed links and networks for use onboard spacecraft through dedicated libraries.
- The FGSE application is realized by using **Oracle Java 7** in order to have a cross-platform solution.
- The SCOS-2000 tables are imported by the FGSE into a dedicated **MySQL** database

Hardware requirements

In order to use the FGSE application, the following accessories are required:

- a USB cable
- a SpaceWire USB-Brick*
- at least a SpaceWire Lab Cable* are required.

The USB-Brick and the Lab cable are used as a link to allow communications between the Workstation hosting the FGSE and the instruments.



Scheme of the link between the Workstation hosting the FGSE and the instrument

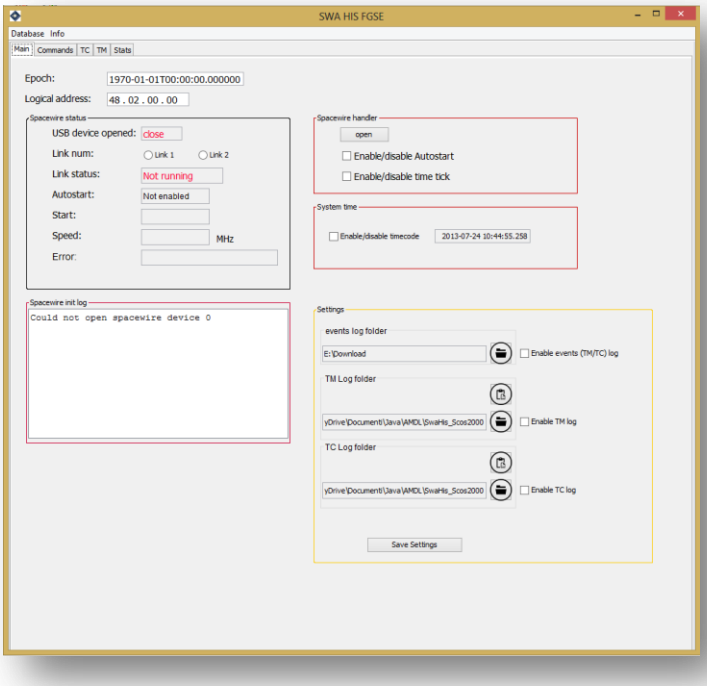
* Components supplied by STAR-Dundee (http://www.star-dundee.com/)

Main panel

The main panel is used for:
Check the SpaceWire connection through the left-side panel called Spacewire status

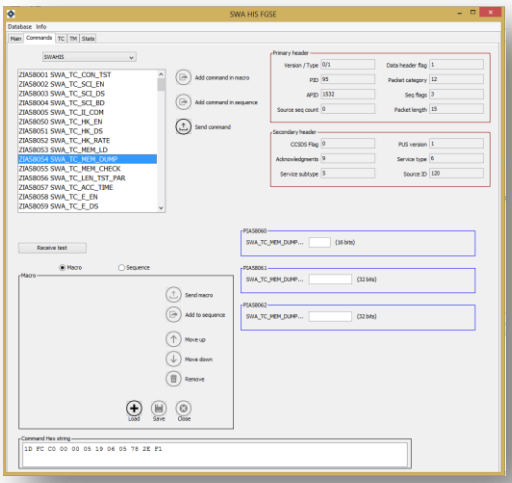
Enable or disable two different SpaceWire functions: *autostart* and *time tick*

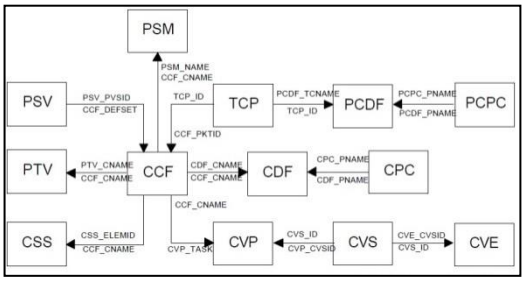
Handle the application log folders and enable/disable the logs while the application is running.



Commands panel

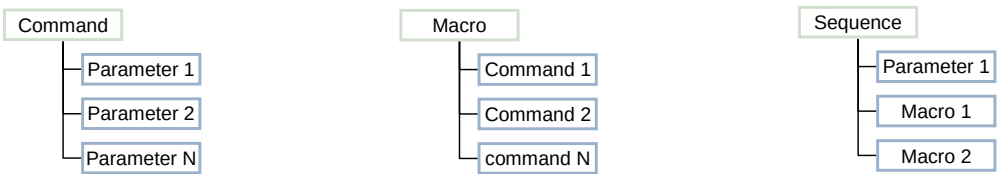
Sending a command to the instrument is a complex operation which requires the creation of a bytes sequence with a well-defined structure which is retrieved from SCOS-2000 database





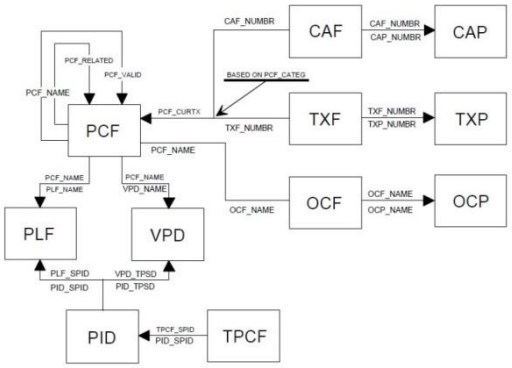
The FGSE commands panel lets the user to select a command among the ones contained within the dedicated SCOS-2000 table.

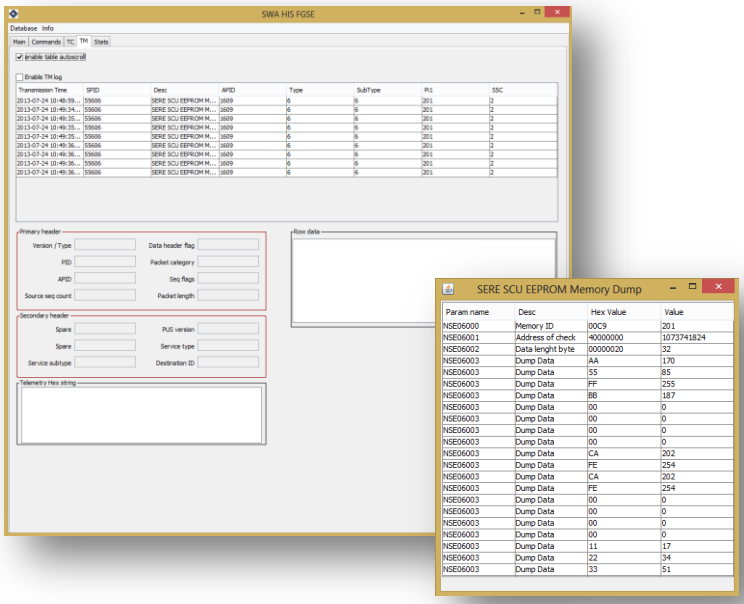
It is also possible to create complex structures called macros and sequences which are aimed to help users in handling recurring operations. The definitions of macro and sequence objects are the following ones:
a macro is defined as a list of commands;
a sequence is defined as a list of commands and macros



Telemetry panel

Each received telemetry packet must be recognized. It's possible by using SCOS-2000 tables containing info about the packet structure.





The incoming packet is read and then processed in order to recognize its nature, i.e.: housekeeping or scientific data.

As a result of this processing, the telemetry is stored into a table showing the main info.

A detailed description of the telemetry packet is available: by selecting a row on the table the *Primary header*, the *secondary header* and the telemetry *hex string* are shown.

A detailed description is also available: by double clicking a row on the table, a new window is shown containing the telemetry related parameters with their values.

Logs

The SWA FGSE is capable of recording three different logs:

- the Events log for both input and output operations
- the TM log for input operations
- the TC log for output operations

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