

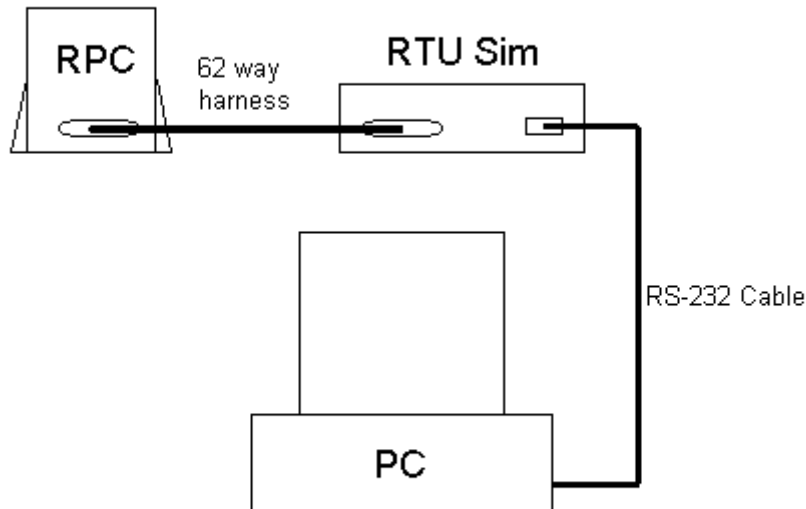
EGSE Users Guide of the
Rosetta Plasma Consortium instrument

24th August 2000

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System Overview



RS – 232 Pin Out

Three wires are used in the RS-232 cable, these are:

PC End – 9 way socket	RTU Sim End – 9 way plug
2	2
3	3
5	5

The front panel of the RTU Sim has 2 LEDs, labeled Power and Ready. The power is switched on via a switch on the back panel and ready shows whether the RTU Sim xilinx configuration software and embedded software have been successfully downloaded from the PC.

Normally the RS-232 cable is connected to COM 1 of the PC (usually a laptop with only COM1 will be used) but the user may change this from a settings menu in the software. The baud rate should be set to 57600.

The pin-out for the 62 way harness is described in the EID-B.

Software Configuration

The program can be started by double clicking on the EGSE icon on the windows desktop. The username should be ROSIS_User and the password ROS1SUSER.

The executable file can be found in c:\egse and the following support files are also required:

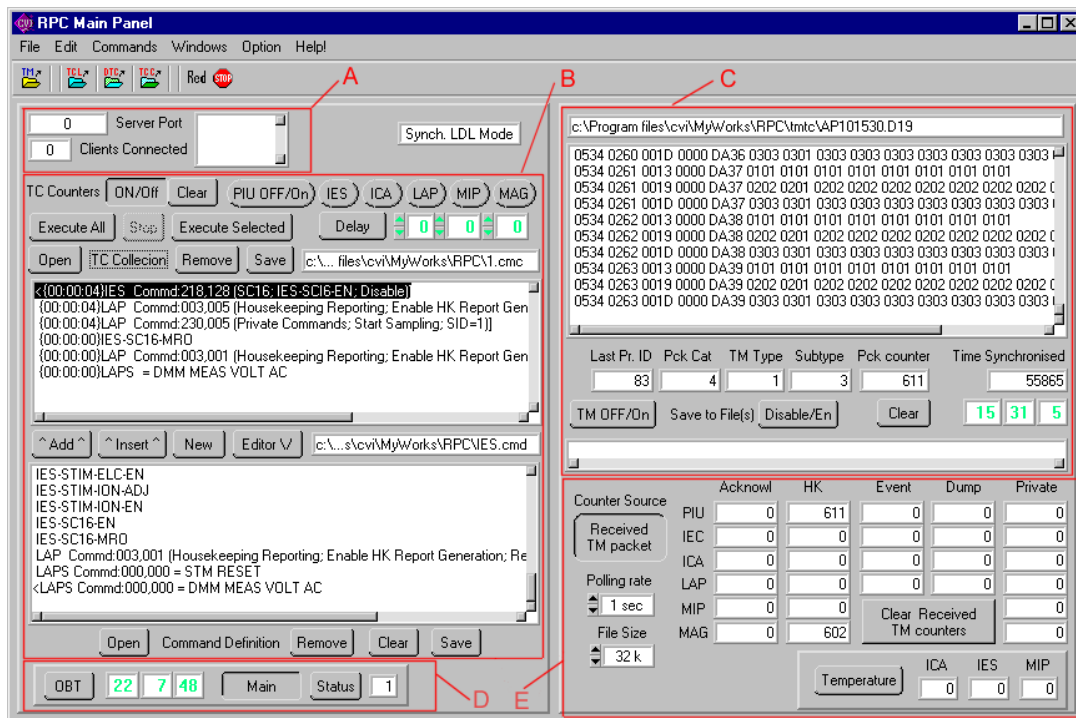
Rpc.exe	Conrs232.cnf
Egsex_64.cnf	Egsep_64.bin
Redu.ico	Egse.ico
Stop.ico	TM2.pcx
TCL.pcx	TCD.pcx
TCC.pcx	Stop.pcx
Event.txt	Piucmd.txt
Iescmd.txt	Icacmd.txt
Lapcmd.txt	Mipcmd.txt
Magcmd.txt	Piu_hk.txt
Mag_hk.txt	IPAddress.ini

And the following directory should also be present:

C:\EGSE\Tmtc

Main Display Screen

When the program is started option boxes appear to ask you whether the embedded software has already been downloaded and if not, would you like to do this now. If the software has already been downloaded, the “Ready” LED on the RTU Sim box will be on. After you have cleared the dialogue boxes the main screen will be shown. This is displayed below.



The screen consists of 5 general areas, highlighted in red above. These are:

A – Network status

This shows the server port to which the experiment GSEs should connect, the number of experiment GSEs connected as clients and a list of which GSEs are currently connected.

B – Commanding Handling Section

This is described in detail in a later section.

C – Telemetry Display

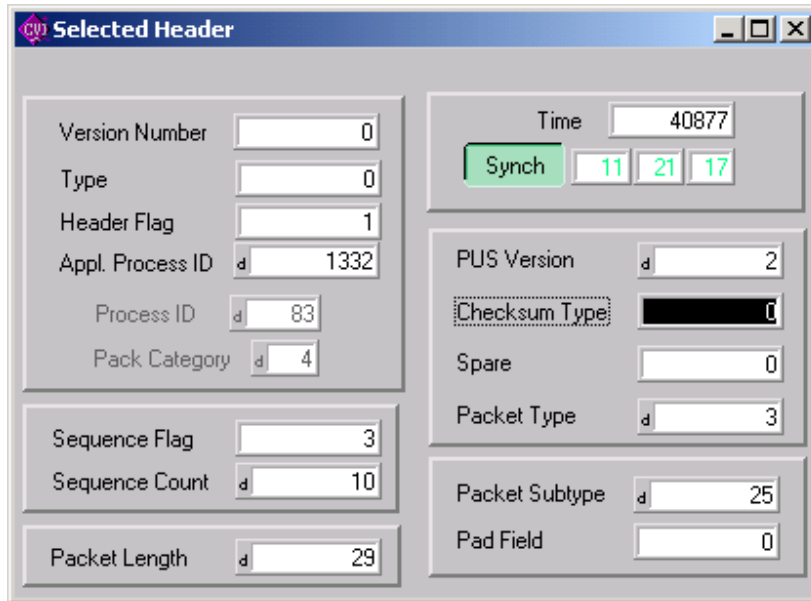
This section shows the latest set of received telemetry from RPC. The list box shows the last 11 TM packets in hex format with the latest packet appended to the bottom of the list. The header for the latest packet is decoded in boxes below. The buttons in this section are:

TM On – This enables polling of RPC at a rate set by the “Polling Rate” control in section E.

Save to File Enable/Disable – This allows the user to archive data. If enabled the data will be archived to files, the size of which can be selected by the “File Size” control in section E.

Clear – This clears the packets currently displayed in the list window.

A packet in this list may be selected by clicking it with the mouse – it will then be shown in the white line at the bottom of the section. If you then double click on this selected packet, the header will be decoded in a pop-up window, as shown:



D – This section contains a button that sends a time update packet to RPC (the current On Board Time is shown next to the button). The middle switch in this section allows the user to select the Main or Redundant channel of the RTU Sim to PIU interface. To verify that the correct channel is being used press the Status button – 0 is for Redundant, 1 signifies Main.

E - The main part of this section shows the various counters for received TM. The counters are arranged by experiment and category and setting the Counter Source switch gives two display options:

1. **Received TM Packet** – This option takes the source sequence count directly from the packet header of the most recent packets to update the counter displays. This will always increase while PIU is switched on.
2. **EGSE Incremented** - This option allows the user to count the various packets over a set period of time. The time period is started by pressing the “Clear Received TM Counters” button. If this button is not pressed from when PIU is powered on, the display is a useful tool for comparing actual packets received and the packet counters maintained by PIU.

The Temperature box displays the thermistor readings from 3 sources IES, ICA and MIP. These are analogue values that are converted by the RTU Sim.

The buttons at the bottom of section E are debugging tools and can be ignored.

Starting the EGSE to receive PIU Housekeeping

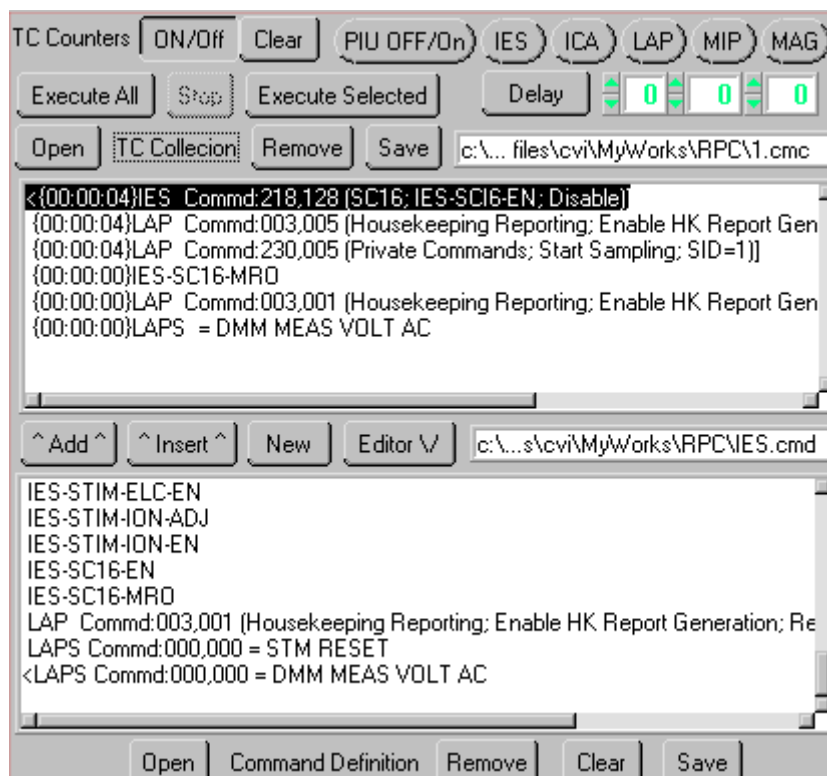
The following sequence should be carried out to have PIU HK displayed on the EGSE.

1. Switch ON PIU power (not sending the High Power TC).
2. Switch On the RTU Sim box.
3. Start the EGSE program.
4. Answer “No” - not already downloaded.
5. Do you want to download now? Answer “Yes”. The ready lamp will come on.
6. Press the PIU Off/On button to send the High Power On command.
7. Press the OBT button to update the on-board time.
8. Press the TM ON button to enable TM polling.
9. Wait to see HK and PIU_Alive event appear.

The default setting for the Event window is that it appears automatically when RPC sends an Event packet. To hide this window go to Option > Event Windows Control > Disable Automatic. The event window can still be shown from Windows >Event Reports.

Editing and sending commands

To edit and send commands, section B of the main screen is used, shown below:



The EGSE supports commands in 2 formats. The original KFKI format was replaced by a new format that was used by the IC EGSE. Since all the integration and functional tests were written in the new format the previous format is now unused.

Commands are edited in the lower window then added to the upper window to be sent. The commands can be sent individually or as part of a script, with predefined time delays if required.

Starting with the bottom row of buttons

Open, Remove, Clear and Save – These buttons are used to handle TC files in the previous format.

Add – This transfers a command from the command definition window to the end of the list in the command collection window.

Insert – This is the same as Add but a command can be inserted into a list.

New – This button opens the TC Command Preparation Window. This window allows the user to select a file by pressing the Open button and then choosing a type and sub-type. Pressing the Append button adds the selected TC to the Collection and definition windows.

Editor – The selected Tc in the definition window can be edited in hex form by pressing this button, as shown below:

The screenshot shows the 'TC Editor' window with the following fields and values:

- Mnemonic Name:** {00:00:00}PIU Commd:195,001
- Packet Header (48 bits):**
 - Version Number: 0
 - Type: 1
 - Header Flag: 1
 - Applic. Proc.ID: 1340 (Proc.ID: 83, Pck.Category: 12)
 - Sequence Flag: 3
 - Sequence Count: 0
 - Packet Length: 7
- Packet Data Field (variable):**
 - PUS Version: 0
 - Checksum Type: 1
 - Acknowledge: 1
 - Packet Type: 195
 - Packet Subtype: 1
 - Pad Field: 0
- Application Data in Hex:** 0001
- Packet Error Control:** 0
- Buttons:** Replace, Append, Cancel

Double clicking on the Application Data box allows you to edit the first 4 words of the parameter in decimal. The Packet error control and source seq. controls are automatically updated during execution.

Open – Opens a collection file (previous format). To open a new format file press the floppy disk button (Open List File) in the top left corner. The selected file will be loaded into both collection and definition windows.

Remove – Deletes a selected TC from the collection window. Note: to select a TC use the arrow keys.

Save – Saves the current collection on the previous format with the current time delays shown in the window.

Execute All – Sends all the commands in the collection window, starting at the top.

Stop – Stops an execution run. If this is pressed during a delay, the next command will not be sent.

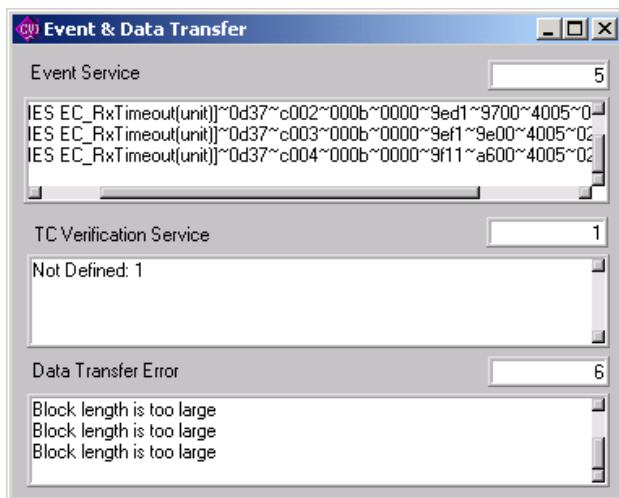
Execute Selected – This sends the selected command.

Delay – This button sets the selected command with the delay shown in the clock.

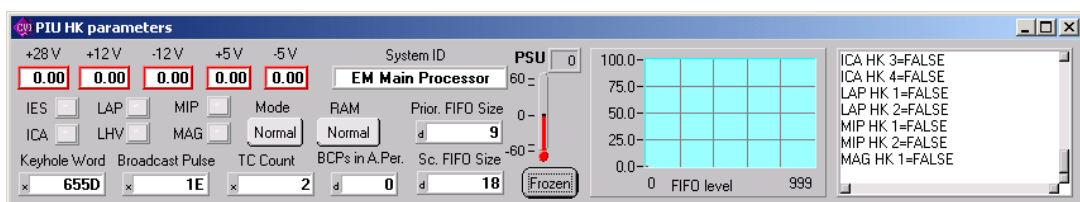
The experiment buttons are shortcuts that power on each instrument. For PIU this corresponds to the High Power command. Note. This will be sent to Main or Redundant depending on the switch setting below.

Additional Displays

Additional displays are available from the Windows menu on the main screen. This includes an event decoding window, which uses an event look-up table to generate a text description of an event.



There is also a PIU HK parameter display as shown below:



Archived data format and display archived data

Archived data is stored in the TMTC directory.

To display archived data go to File-> Open TM File. The same decoding tools can be used for live data as for saved data.

The received TM packets or the packets of the replayed files will be distributed to the sensor EGSEs if there are connected through Ethernet link. For this, from the menu in the Commands should be start the server (Register TC Server). The connected sensor EGSEs are indicated in the Clients Connected box. They will receive their TM packets in quasi real-time. The IP and Port Address can be modified in the Commands->Definition of TCP Addresses submenu. The new IP and Port addresses will be saved in the file (IPAddress.ini) which be used at the next start of the program. But the default addresses can be restored in this submenu using the Default button.

The LAP Stimuly control is also realized through Ethernet connection. The KFKI EGSE should be connected to LAP Stim server for sending a LAP Stim command. Menu Commands->Connect LAPStim. Server.