



Server for
Electrical Ground Support Equipment
for the “Obstanovka” Project

user manual

SGF Kft.

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1. Graphical user interface of the server application

The PWCserver is designed for the EGSE for the “Obstanovka” Project. Its task is to simulate the embedded hardware for the PWCegse application. Figure 1. shows the main panel of the server application.

The embedded hardware in the PWC project collects scientific or housekeeping (HK) data from the eleven different experiments and sends to the EGSE application (telemetry direction). The other task of the hardware is to receive commands from the EGSE application and forwards to the corresponding experiments (command direction). The server can simulate the operation of the embedded hardware for the EGSE client application.

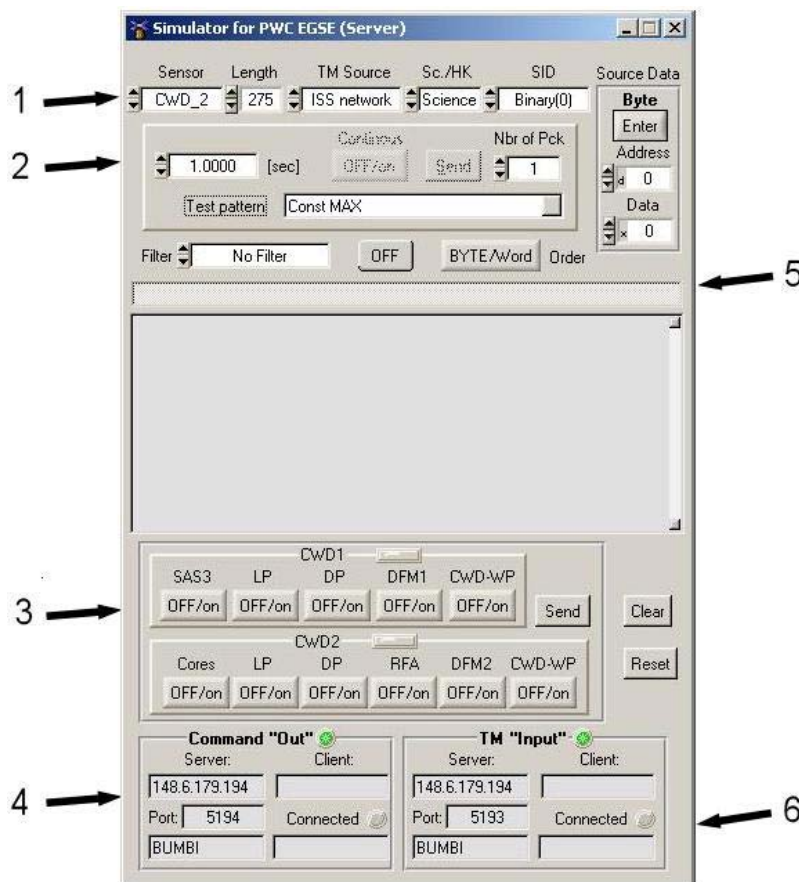


Figure 1. The main panel of PWCServer



The numbered arrows show the main areas on the panel, these are:

1. Source setting area
2. Data sending area
3. Sensor on/off switch buttons
4. TCP/IP connection parameters and status for the out (command) direction
5. Display area of the data received by the server
6. TCP/IP connection parameters and status for the in (telemetry) direction

1.1 Source settings

In this area the user can define the source of the data. The *sensor* box contains all the possible source sensors, while in the *TM source* the user can define the source channel. The data to be sent can be either a housekeeping (*HK*) or *Science* data which can be selected in the *Sc./HK* field of the area. The *SID* and the length of the data packet can also be set using the *SID* and *Length* fields.

Sensors:

- CWD_2
- DFM2
- RFA
- DP_2
- LP_2
- CORES
- CWD_1
- DFM1
- DP_1
- LP_1
- SAS3
- DACU2
- DACU1
- BSTM

Telemetry sources:

- ISS network
- Amateur Radio
- Bit Serial
- Slow Analog
- Exp. Sim



Possible SID:

- Binary(0)
- Text(1)
- Power(0)
- Software(21)
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- -1
- -2

1.2 Data sending

The server application sends data to the connected PWCegse client. This can be done in two ways. In simple sending operation the server sends a number of packets defined in *Nbr of Pck* field once the *Send* button is pressed. The value of the *Nbr of Pck* field is between 1 and 64. In continuous sending mode the servers sends the defined number of packets repeatedly with a defined period time. The period time can be defined in the first filed from the left side of de area in seconds.

Using the *Test Pattern* box the data in the packet can be changed. There are a several predefined data pattern and an option to load data form an external (.raw) file. The data file (.raw) contains data words. One word is 2 byte long (16 bit singed integer) in little-endian¹ byte order.

¹ Denoting and addressing organization whereby the section of a memory address that selects a byte within a word is interpreted so that the largest numerical byte address is located at the least significant end of the addressed word:

.... increasing addresses >.....
.....0x0D, 0x0C, 0x0B, 0x0A.....

The least significant byte (LSB) value, 0x0D, is at the lowest address. The other bytes follow in increasing order of significance.



1.3 Sensor on/off switch button

The simulator sends test patters from the simulated eleven different experiments. The instruments on/off state can be changed using the EGSE interface by sending a 'turn on'/'turn off' request message. The buttons in this area indicate the on/off state of the instruments. If a 'turn on' request arrives from the PWCEgse program than the appropriate buttons background color turns to green. The user can set the real on/off state of the experiment considering to the requests from the EGSE than send the states to the client application using the *send* button. After the simulator receives a 'turn off' request the background of the appropriate button turns to grey. The on/off state of the buttons indicates the real state of the experiment. Reset button turns all the experiments off.

1.4 TCP/IP connection parameters and status for the out (command) direction

The communication between the PWCEgse client and the PWCSerever server application is based on TCP/IP connection. This area contains the connection parameters used by the server for receiving commands from the client application. The *server* field contains the IP address of the server and the *port* filed contains the port number used by the server to receive commands from the client application. If a client connects to the server using the above parameters then a green light and the IP address of the client in the *client* filed indicates that.

1.5 Display area of the data received by the server

If the server receives data from the client (command) then the received data will be printed to this text box. The *clear* button clears all the text from the box.

1.6 TCP/IP connection parameters and status for the in (telemetry) direction

Similar to the area number 4 with the difference that this area indicates the telemetry direction.