PSU Control
Manual
for V0.2

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Contents

1 Introduction

This program is designed to work with the RS232 Serial Interface by Delta Elektronika. With this program one can set the voltage and current of the power supply. Additionally control can be switched between this remote interface and the local dials on the PSU.

Before using this program the interface and PSU should be calibrated using the manufacturer supplied program, available under `https://www.delta-elektronika.nl/en/products/interfaces/rs232-serial-interface.html`

For the atomic physics group: The program should also be avaiable on Scratch:

`S:\Manuals\Elektronik-Elektrogeräte\Power Supply\Delta Elektronika SM6000-series SM45-140`

2 Interface

The interface is mainly split into four parts (referencing fig. 1):

A Selection of the serial port used for communication.

B Indication and control of the status of the PSU.

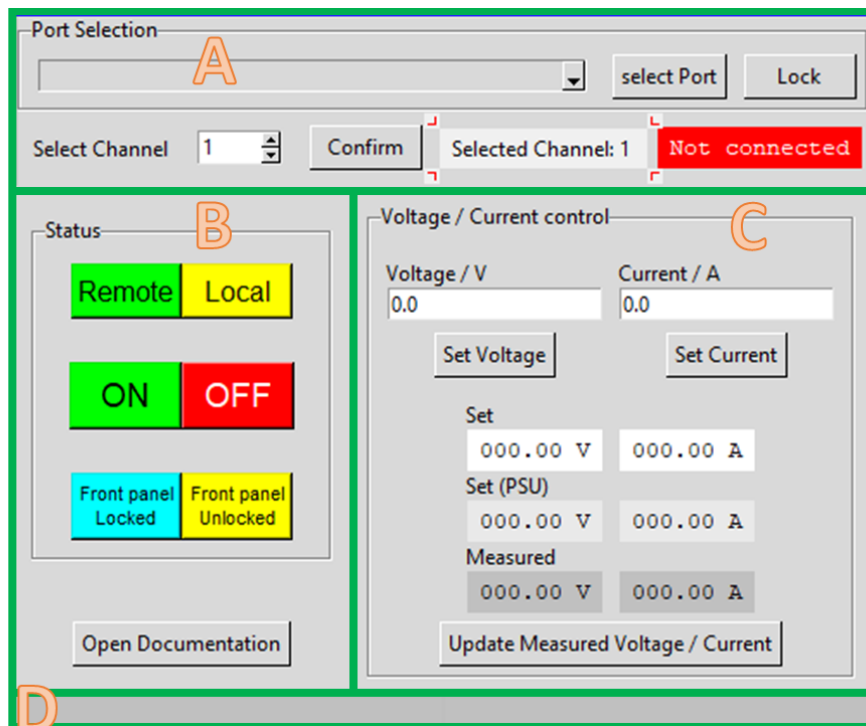C Indication and control of Voltage and Current

D Error output.

Figure 1: Interface of the program

3 A - Connection Control

3.1 Port Selection

Use the dropdown box to select the COM Port associated with the serial interface to the PSU. If the program automatically detected the correct port it should already be selected. The program reloads the list of available ports automatically, therefor a restart of the program should not be required if the interface is connected after starting the program. In case that the correct port does not show up, please check the connection.

After choosing the correct COM Port press `"select Port"` to establish a connection.

One may use the `"Lock"` button the lock the selection of a different port. Use the `"Unlock"` button to unlock the selection.

3.2   Channel Selection

For use with multiple, individually controlled power supplies. The PSU need to be set to different channels using the dip-switches located on the interface module (reference the manual of the interface card!).

By default the channel 1 is selected. To select a different channel, select the wanted channel number using the spinbox and confitm by pressing `"Confirm"`.

3.3   Connection indicator

The status of the serial connection for the currently selected channel, mainly indicating `Red - Not connected` (no connection established), `Yellow - Working` (program is communicating and may not respond instantaneously), and `Green - Connected` (connection is established). Please note that the connection status is only evaluated while trying to use the serial connection.

4   B - PSU status

4.1   Remote - Local indication

This displays whether the power supply is controlled by this remote software (Remote) or by the dials on the PSU (Local). To use the voltage and current control functionality of this program the `"Remote"` button should be lit.

To change the PSU to remote control, simply press the `"Remote"` button. A popup window should appear, here select `"Confirm"`. **WARNING:** Be aware when switching to remote control, the PSU will output the voltage and current set by this program.

To change the PSU to local control, simply press the `"Local"` button. A popup window should appear, here select `"Confirm"`. **WARNING:** Be aware when switching to remote control, the PSU will output the voltage and current set by the dials on the front panel of the PSU. This means if the front-panel voltage potentiometer is set to 35 V the power supply will output 35 V.

Set the potentiometer for voltage and current on the front panel to a safe value prior to using the Remote and Local buttons.

4.2   ON - OFF indication

This displays whether the output of the PSU is enabled. One may turn the output on/off by pressing the corresponding button.

4.3   Front panel indication

Allows to lock/unlock the front panel pushbutton. The current setting is indicated by the illuminated button.

5   C - Voltage / Current control

To set the remote controlled voltage (in volt) and current (in amps) use the input boxes and confirm by pressing the `"Set Voltage"` / the `"Set Current"` button. This will first locally set the desired settings and then try to transmit the appropriate command to set the PSU to these settings. The input values are limited to the maximum values set during the calibration of the power supply.

Here three different sets of voltage and current are displayed:

Set The locally requested values.

Set (PSU) The settings of the PSU.

Measured The by the PSU measured values (updated only during initialization or manually).

To update the measured values manually press the `"Update Measured Voltage / Current"` button. Please note that the measurement takes some time, during which the GUI will be unresponsive for about 4 to 15 seconds.

6 D - Error Output

Should an expected error occur, an error message will be displayed here. Expected errors include:

- Connection is not jet established! Please select a port.

- Current is not in range. Max Current is {} A

- Voltage is not in range. Max Voltage is {} V

- Input for Voltage must be a floating point number or integer!

- Input for Current must be a floating point number or integer!

- The serial connection could not be established, because either the device was not found or could not be configured.

- Could not read from serial interface

- Could not read from serial interface too often! Closing Connection

- {Serial Exception} Closing connection

7 Terminal Window

In addition to the GUI a terminal window should be displayed. In this terminal the communication can be monitored.