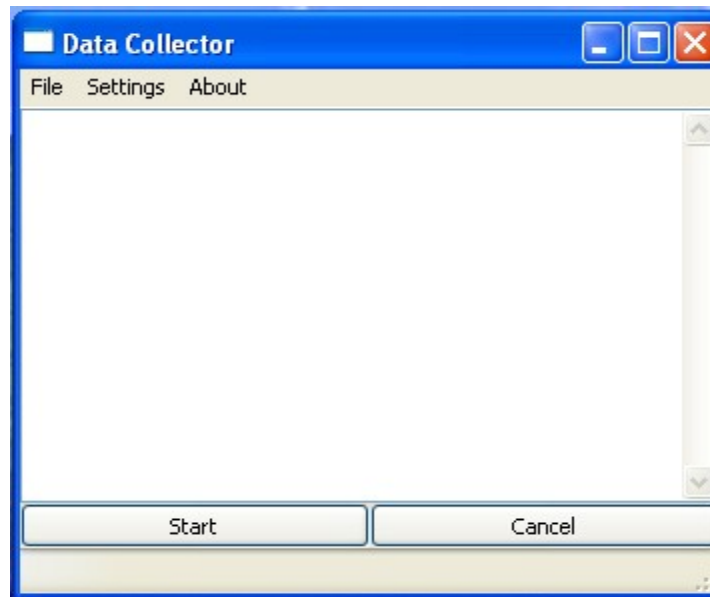


Data collector and stage positioning program (RS232)



Introduction:

This is program aimed to position the micro-stepper stage and collect data from the power-meter. It is possible to use two kinds of power-meter made by Hamamatsu Photonics and USHIO company.

Program is still in development phase, so some features can be missing or can be not completely implemented. However, it is already possible to use the program to collect data and export them in several formats as used by MS Excel, Gnuplot and as a matrix data.

Necessary components:

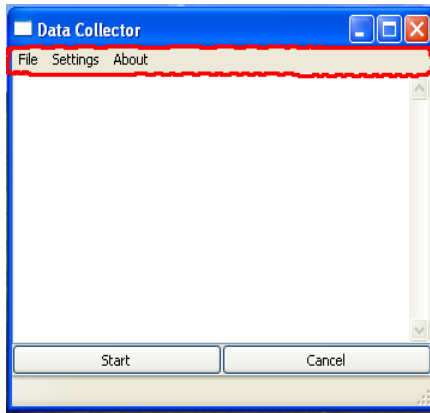
To run the program the [Microsoft Visual C++ 2008 Redistributable Package](#) is necessary to be installed on the computer.

Program is packed using zip method. Folder with the program and necessary libraries can be extracted to any location.

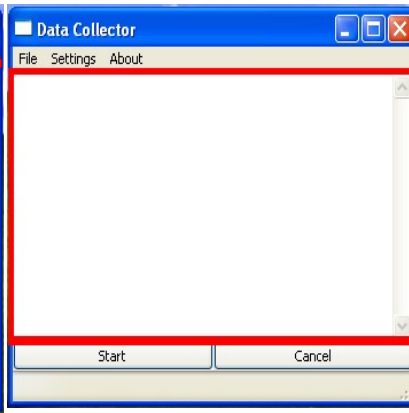
Operation:

The first run of the program will create the file config.ini where all the settings for the micro-stepper, power-meter, and limits are saved. Changes in the settings (by running program) will also be saved as default settings in the config.ini file.

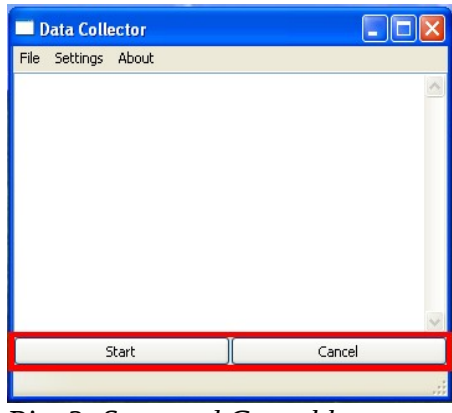
The main window consist of menu bar, Log area, and buttons for start and cancel of operation.



Pict 1: Menu bar of the main application window



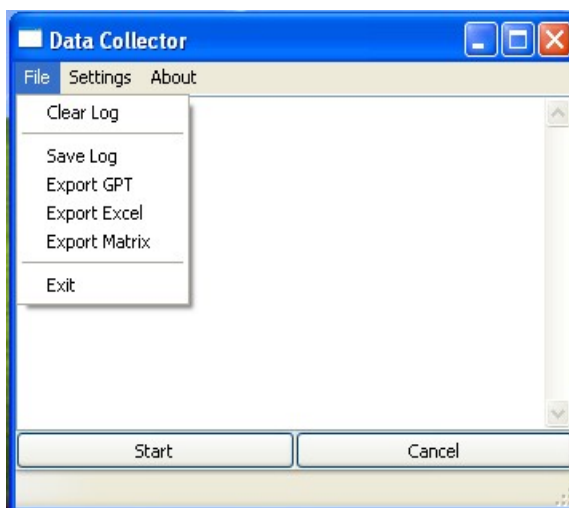
Pict 2: Log area where all the informations and errors are logged.



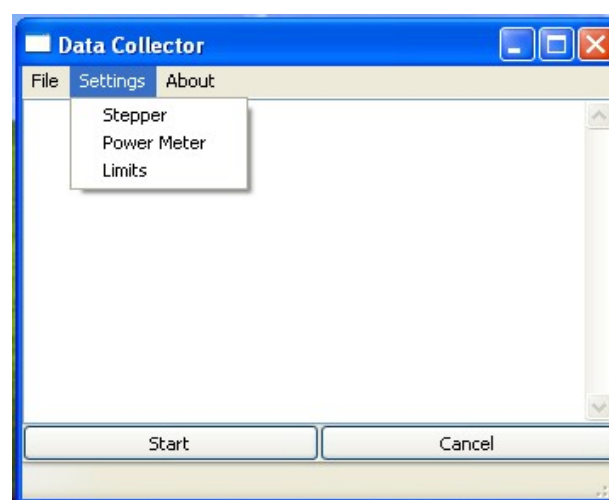
Pict 3: Start and Cancel buttons

The File menu in the menu bar (Pict 1) have several options:

- **Clear Log** – will clear the Log area (Pict 2)
- **Save Log** – will save the content of the Log area to the file (useful for bug tracking and saving informations on measurement)
- **Export GPT** – exports data in the format that can be used by [Gnuplot](#) to plot 3D pictures
- **Export Excel** – exports data in Excel friendly format that allows plotting 3D shapes (not tested yet)
- **Export Matrix** – exports data in the matrix format
- **Exit** – quits the program (as well as X in the right upper corner of application window)



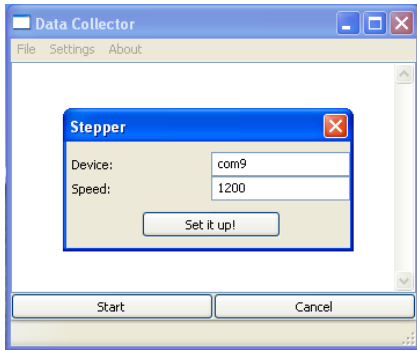
Pict 4: File menu in the menu bar



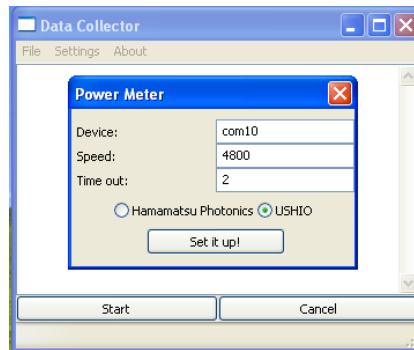
Pict 5: Settings menu of menu bar

The Settings Menu contains several important items:

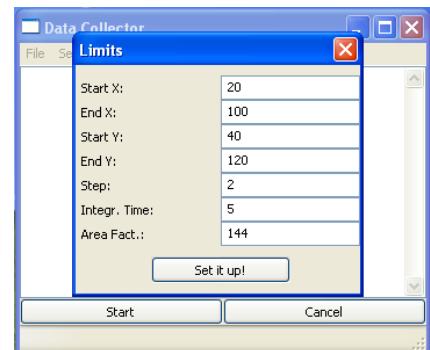
- **Stepper** – is the item for setting up the stepper device and the speed.
- **Power meter** – is the item to set up power meter device, speed, time out, and kind of the power meter that will be used during measurement (Hamamatsu Photonics or USHIO)
- **Limits** – set up **limits** for stepper to operate within, **step** (number of steps between two subsequent measurements), **integration time** (how many measurements will be averaged in each measurement point), and **area factor** (area ratio between sensor and pinhole – if applicable)



Pict 6: Dialog for setting up stepper device



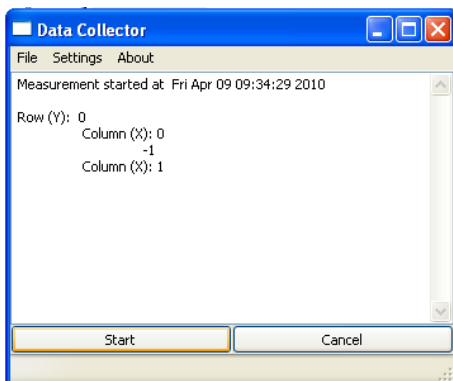
Pict 7: Dialog for power meter set up



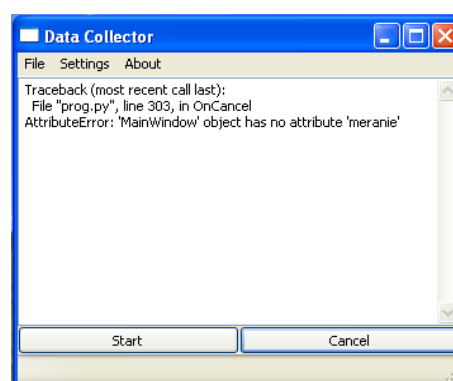
Pict 8: Dialog for setting up limits

The device is meant the serial device (or address) used by operating system to address the given device. In Windows OS it is marked as COM + number, whereas in Linux/GNU it is in form of "/dev/ttyS0" or if USBtoSerial adapter is used in form of "/dev/ttyUSB0". This is the input for the device field in the Stepper and Power Meter dialog. Speed is meant to be the bps speed of communication.

The Log area shows information about the measurement that undergoes or the error messages that were generated by operation. Error messages are important for further improvement of the program and its evolution. The log can be saved (File → Save Log) and emailed to me.



Pic. 9: Running measurement with information in Log area



Pic. 10: Error message displayed in the Log area