ScopeWriter Instructions

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1 Introduction

In order to provide an easy method of writing data from the VELA/CLARA LeCroy oscilloscopes to EPICS, a Python program – ScopeWriter – has been written. This document will provide some basic instructions on the functionality of the program. For more information on how the program works, please refer to [1].

2 Scope Writer Program

2.1 Dependencies

In order to run the Scope Writer program on any LeCroy oscilloscope, the following programs/libraries will be needed:

- Python 2.7.x - `https://www.python.org/`

- PyQt4 - `https://pypi.python.org/pypi/PyQt4`

- PyEPICS - `http://cars9.uchicago.edu/software/python/pyepics3/`

- VELA/CLARA Scope controller - `\\\\fed.cclrc.ac.uk\\Org\\NLab\\ASTeC\\Projects\\VELA\\Software\\VELA_CLARA_PYDs\\bin\\Release`

- PyWin32 - `https://sourceforge.net/projects/pywin32/`

The simplest way to include the Hardware Controller Python libraries to your path is to create an environment variable, `%PYTHONPATH%`, and set it to the network location given above for the VELA/CLARA controllers.

2.2 Instructions

- Run `scope_writer_launcher.py`.

- Select controller type ('Physical' for a real scope) and beamline, and click 'Launch'. **NOTE**: At the time of writing (10/5/17), EPICS PVs only exist for the VELA injector, and so this must be selected at the launcher.

- If you wish to use a particular scope setup, load in the setup file using the file browser on the left, and click 'Load setup'. **NOTE**: You will still need to click 'Recall now!' on the oscilloscope interface, under 'File → Recall setup'.

- For each channel you wish to monitor (up to 4 channels can be logged to EPICS at once, but this may slow the loop down to below 10 Hz):

– Select the EPICS PV name to write the calculated value to (these are based on the beamline selected in the launcher).

– Choose the measurement type (integrated area, maximum/minimum voltage, peak-to-peak).

– Choose a filter type and interval (currently, only the moving average filter is implemented).

– Select the region of the scope containing the signal you wish to monitor. **NOTE**: This will depend on the scope setup; currently, the maximum array size we can write to the scope trace PVs is 2000, and so it should be ensured that the timebase of the zoomed-in trace is 1/10 that of the timebase of the main signals. The region of interest that is selected is then a portion of this 2000.

- Click 'Start logging to EPICS'.

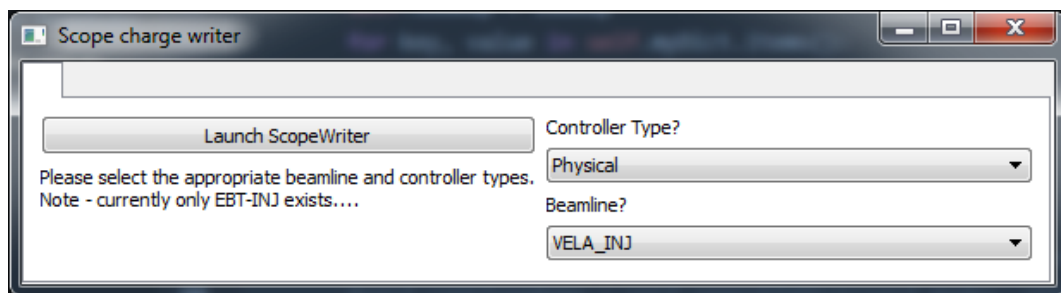- To stop the loop, click 'Abort'.

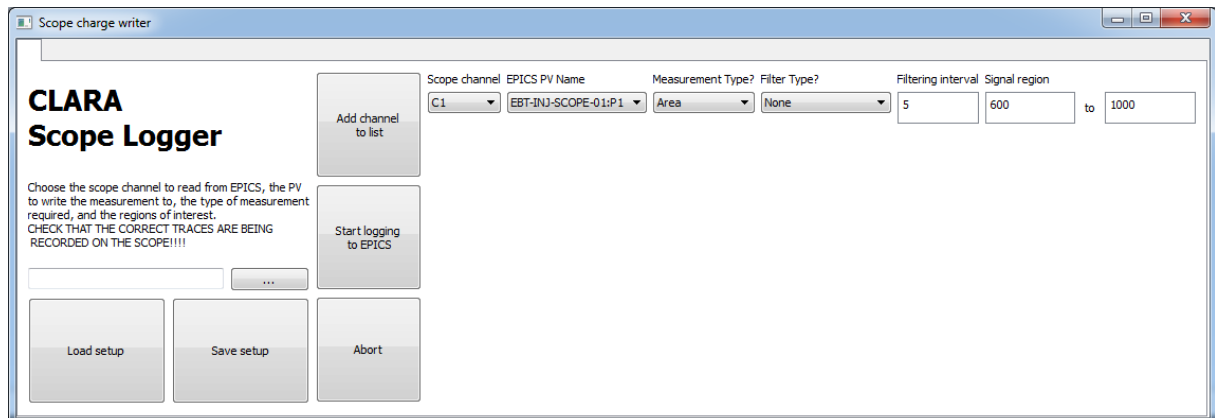
Figure 1: Launcher for VELA/CLARA ChargeLogger.
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Figure 2: GUI for VELA/CLARA ChargeLogger.
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2.3 Flowchart

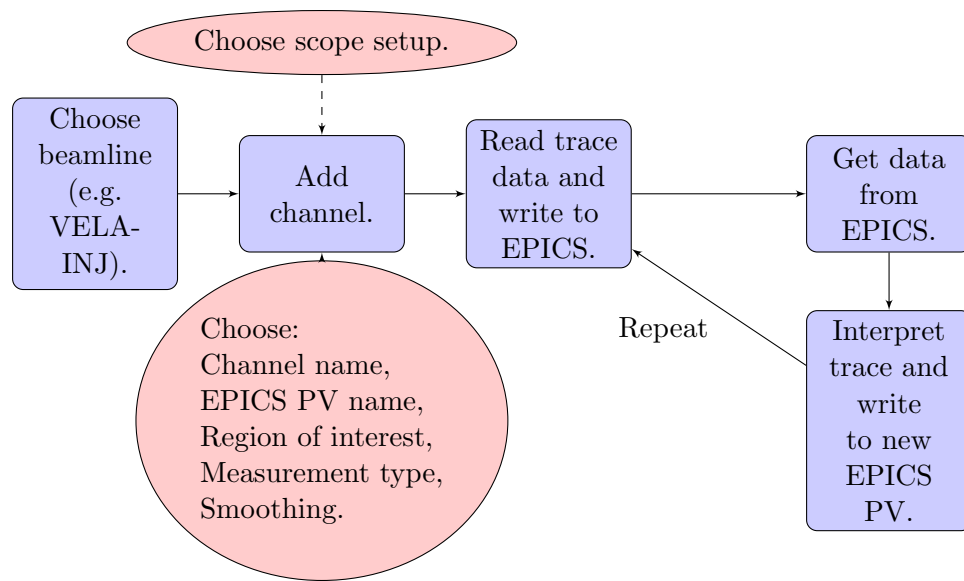

Figure 3: Flowchart presenting how the Scope Writer program will work.

References

[1] A. D. Brynes. "Trello card: Software: Charge measurement", 2017. `https://trello.com/c/2VQcQ42D/110-software-charge-measurement-adb`.