Instructions for Logging Charge on VELA Oscilloscopes

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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 – ChargeLogger – has been written. This document will provide some instructions on what the program can do.

2 Charge Logger Program

A copy of this program should exist on each of the LeCroy scopes used for charge measurements on VELA/CLARA. It uses the LeCroy XStream Dynamic Shared Object (DSO) module to access data read from the scope – for more information, see [1]. For information on the reasoning behind this choice, see [2], Section 5.1. To run the program, just double click on 'mainApp.py' in the main folder.

This program will only work when the user has a remote desktop connection to the oscilloscope. It requires the user to know which particular saved scope setup is required for a given arrangement of diagnostic devices – these setups will need to be correctly documented on the wiki, and given intelligible filenames. Once this is known, the operator can start reading data from the oscilloscope using the ChargeLogger. There are options to select which channel(s) are to be read, and whether the full trace is required or just the measured value (such as the mean, or minimum value, etc.). At the click of the button, all of this information is sent to EPICS. In future, options may be provided to allow the user to save the traces to a file, or apply averaging. The functionality of this program is limited as it has only one function: writing data to EPICS. It is assumed that most operators would prefer to make changes through the scope's interface itself rather than through this GUI - see 1.

If the checkbox corresponding to a channel is ticked, data from the oscilloscope for that channel will be sent to EPICS. From the drop-down menu for each channel, the diagnostic device connected to that channel will be written to EPICS. For the radio buttons for each channel, "Yes" corresponds to sending the full waveform to EPICS, "No" means that the measured value ("P") value will be written to EPICS.

The full range of PVs for an oscilloscope, in this case **EBT-INJ-SCOPE-01** are as follows:

- **EBT-INJ-SCOPE-01:TR1....TR4**, if the traces are being recorded.
- **EBT-INJ-SCOPE-01:P1....P4**, if the P values for a given setup are being recorded.

References

[1] *LeCroy Wavemaster Automation Manual.*

[2] *VELA Manual: Charge Measurements.*

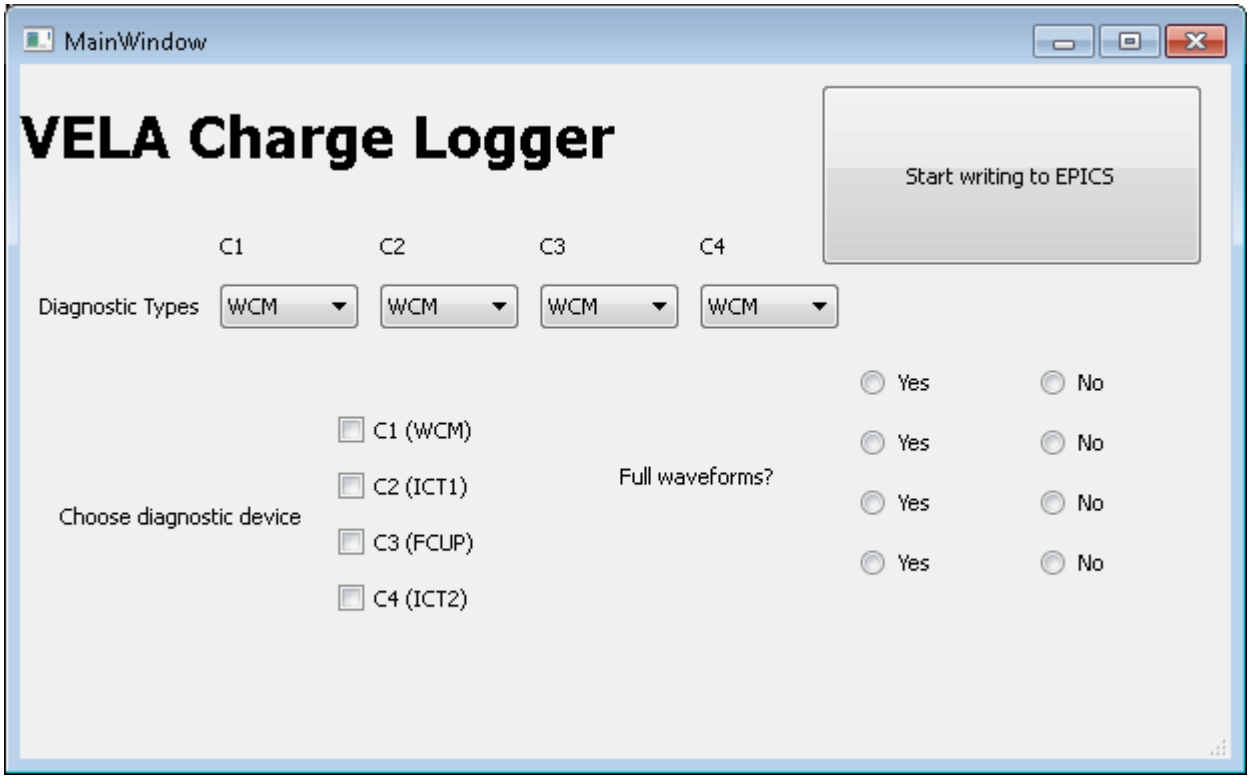

Figure 1: GUI for VELA/CLARA ChargeLogger.

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