

CCM 3.8.1 Software Manual

Working DRAFT, 8/21/2010

this draft does not yet document many of the version 3.8.1 features

Introduction

This software is designed to interface your Windows PC with a Coincidence Counting Module (CCM) via the USB port in FTDI's Morph-IC device. It is available free for download from

<http://www.trincoll.edu/~dbrannin/>

or

<http://people.whitman.edu/~beckmk/QM/>

Two versions of the software are available:

- 1.) A stand-alone application, created in the LabVIEW programming environment. You do not need LabVIEW to run it on your PC.
- 2.) A LabVIEW Project, containing the source vi's for the application, which may be run and modified in the LabVIEW environment (version 2009 or higher).

Also available at the web site are the assembly instructions for the CCM hardware.

Recommended system requirements

- Windows XP or above
- 256 MB RAM
- 200 MB disk space
- 1 available USB port
- 1024 x 768 screen resolution

Installation

Step 1: Installing drivers for the FTDI device

If you do not have the drivers for an FTDI USB interface device previously installed, run the setup executable "CDM 2.04.16.exe" located in the "FTDI Drivers" folder.

Alternatively, you may download the latest D2XX drivers for FT2232 devices from

<http://www.ftdichip.com>.

Step 2a (Stand-alone Application only): Installing the CCM application

To install the CCM application and the required LabVIEW Run-time Engine, run the executable "setup.exe" located in the "CCM Installer" folder and follow the steps to complete the setup.

Step 2b (LabVIEW Project only): Opening the Project Files

Open the labview Project file "CCM.lvproj"  in the CCM project folder
To run the CCM vi, open "CCM 3.8.1 USB.vi" from the project explorer.

Data Acquisition

To start (application only), go to “Start”->”Programs”->”CCM” and open “CCM”. Make sure that the first button in the toolbar appears as  (see Figure 1). This indicates that the application is running. If the button appears as , click  to run the application.

To acquire data, click on the “Start Acquiring” button  in Figure 1. The button will change its appearance as shown:



The acquired counts will be displayed every *screen update period* (default is once per second). Click “Stop Acquiring”  to stop data acquisition. The “Reset Plots” button  will clear all plots.

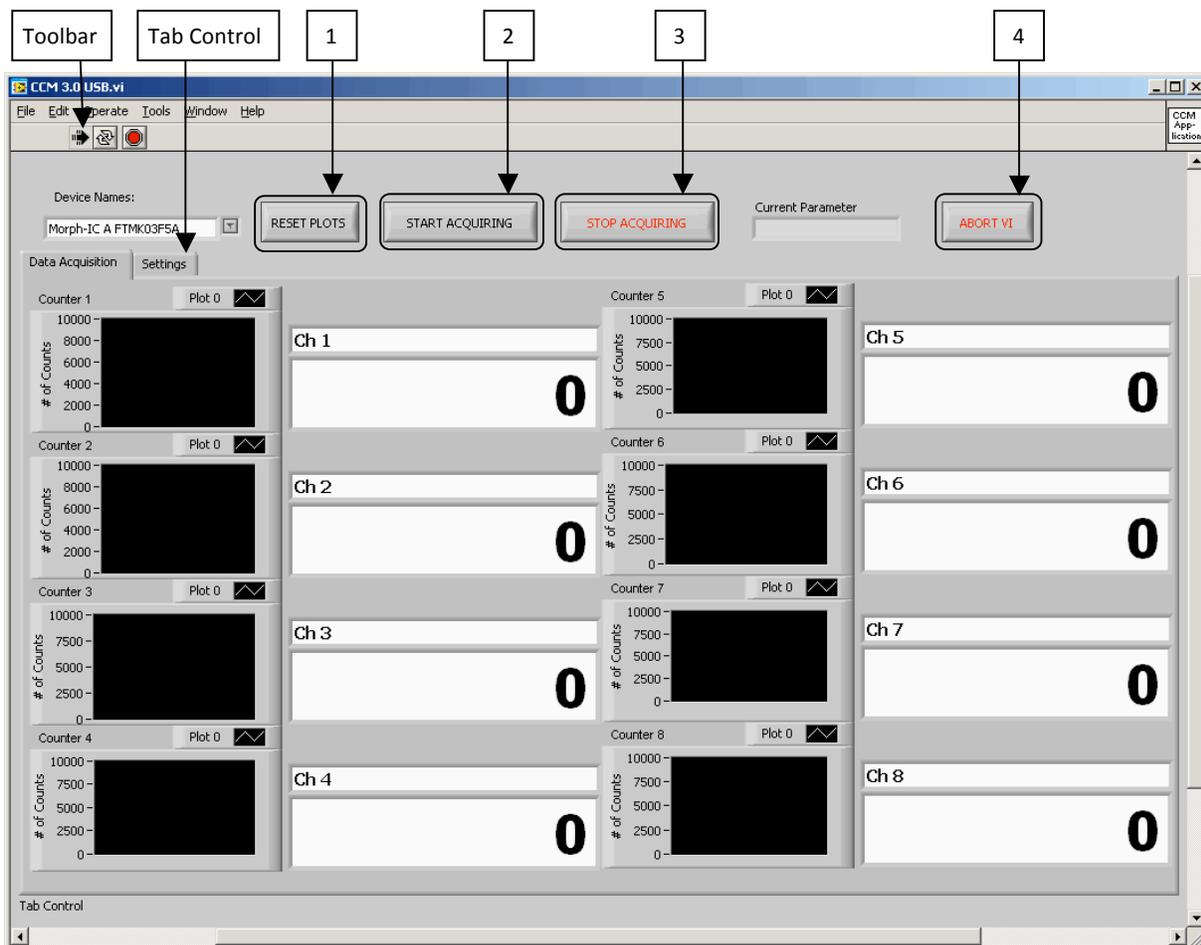


Figure 1: Data Acquisition Tab

To shut down first click the “Abort VI” button  then close the window.

Do not use the “Abort Execution” button  located in the toolbar.

Settings

Changing the Settings:

Make sure that the application is active , but is not acquiring data. Use the tab control (Figure 1) to navigate to the settings tab (Figure 2, below) and change the settings as required. These new settings will be active immediately, the next time you click “Start Acquiring.” You may save your current values by clicking the “Save Settings” button. To restore your previously saved values, click “Restore Settings” or abort the application by clicking “Abort VI” and restart the application. To return to the “factory” default settings, abort the program by clicking the “Abort VI” button, and select “Reinitialize Values to Default” from the “Edit” menu.

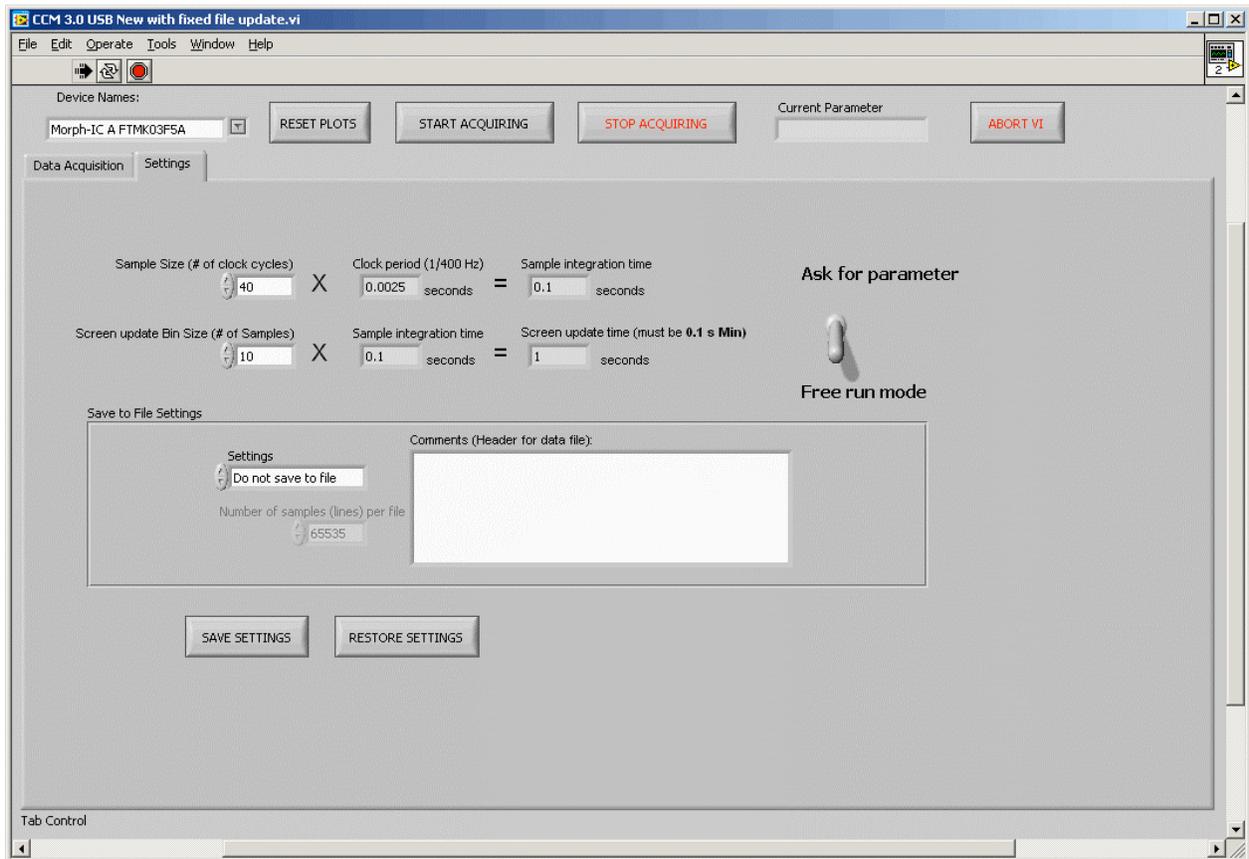


Figure 2: Settings Tab

Settings explained

Sample Size (# of clock cycles): A sample is the smallest interval of data that is written to the screen or a file. The sample size is the number of 2.5 ms clock periods that a single sample contains.

Screen update Bin Size (# of Samples): This is the number of samples the application accumulates before updating the on-screen data.

Screen update time: The integration time for the on-screen data. After each screen update, the application also prompts the user to enter a new parameter value in “Ask for parameter” mode.

Ask for parameter: In this mode, the application prompts the user to input a new value for some user-controlled parameter (i.e., a polarizer setting) after each screen update. If the data are being written to a file, the parameter value for each set of counts is automatically written to file along with the data.

Free Run mode: In this mode, the application counts continuously without waiting for input from the user.

Save to file:

Data are written to disk in a comma-delimited text file format.

In “Free run” mode, the format is: Time, Ch 1, Ch 2, Ch 3, Ch 4, Ch 5, Ch 6, Ch 7, Ch 8

In “Ask for parameter” mode: Time, Parameter, Ch 1, Ch 2, Ch 3, Ch 4, Ch 5, Ch 6, Ch 7, Ch 8

In both modes, the clock rate, sample integration time and the contents of the “comments” window are written to the header at the beginning of the first file. Each line of the file is one sample. The lines are written to the file at the end of each screen update period.

Troubleshooting

Make sure that the Morph-IC device on the CCM is connected and powered: the red LED on the Morph-IC should be lit when it is connected to a PC with a USB cable.

The Morph-IC device may not be recognized if the USB cable that connects it to the PC is too long. After a short (~1 m) USB cable is used for the initial recognition, a longer one can be used for operation.

“Morph-IC device not found. Connect to a Morph-IC device and restart the program.”: This error may occur when a Morph-IC device is plugged in while the application is in the active state. To resolve this issue, simply restart acquisition.

“Read data error. Restart acquisition.”: This error may occur when a Morph-IC device is disconnected, or when a device is first connected. Make sure the Morph-IC device is connected and restart acquisition.

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