ADLINK Technical Document

Abstract	How to use General DAQ in MATLAB		
OS	Windows		
Keyword	MAPS, General DAQ, PCIS-DASK		
Related Products	PCI-9111, PCI-9112, PCI-9113, PCI-9114, PCI-9116,PCI-9221, PCI-9222, PCI-9223, PCI-9524,PCI-9812		
Date	2021/08/27	No.	202110005

- Overview:

The DAQ module requires a third-party compiler installed on your system to control the DAQ card from MATLAB® correctly. This document outlines the compiler setup process and how to download sample code for MATLAB.

NOTE: The MathWorks® Data Acquisition Toolbox™ is widely used to connect to data acquisition hardware and read data into MATLAB (also a MathWorks product). ADLINK does not provide this tool, so it requires an alternative compiler to install the DLLs needed to control the DAQ card with MATLAB.

- Prerequisites:

Install MAPS Core or PCIS-DASK.

- Solution:

The steps below show how to set up the correct environment and use the code samples in MATLAB.

Step 1:

Go to this link: http://www.mathworks.com/support/sysreq/previous_releases.html

Step 2:

In the “Release” column, find the MATLAB version installed on your system.

Previous Releases: System Requirements and Supported Compilers

Release	Windows	Linux	Mac	Solaris/UNIX	Supported Compilers	Platform Availability
R2021a (MATLAB 9.10)	Details	Details	Details	N/A	Details	Details
R2020b (MATLAB 9.9)	Details	Details	Details	N/A	Details	Details
R2020a (MATLAB 9.8)	Details	Details	Details	N/A	Details	Details
R2019b (MATLAB 9.7)	Details	Details	Details	N/A	Details	Details
R2019a (MATLAB 9.6)	Details	Details	Details	N/A	Details	Details
R2018b (MATLAB 9.5)	Details	Details	Details	N/A	Details	Details
R2018a (MATLAB 9.4)	Details	Details	Details	N/A	Details	Details
R2017b (MATLAB 9.3)	Details	Details	Details	N/A	Details	Details
R2017a (MATLAB 9.2)	Details	Details	Details	N/A	Details	Details
R2016b (MATLAB 9.1)	Details	Details	Details	N/A	Details	Details
R2016a (MATLAB 9.0)	Details	Details	Details	N/A	Details	Details
R2015b (MATLAB 8.6)	Details	Details	Details	N/A	Details	N/A

Step 3:

In the “Supported Compilers” column, in the row corresponding to the MATLAB version, click the “Details” link.

Previous Releases: System Requirements and Supported Compilers

Release	Windows	Linux	Mac	Solaris/UNIX	Supported Compilers	Platform Availability
R2021a (MATLAB 9.10)	Details	Details	Details	N/A	Details	Details
R2020b (MATLAB 9.9)	Details	Details	Details	N/A	Details	Details
R2020a (MATLAB 9.8)	Details	Details	Details	N/A	Details	Details
R2019b (MATLAB 9.7)	Details	Details	Details	N/A	Details	Details
R2019a (MATLAB 9.6)	Details	Details	Details	N/A	Details	Details
R2018b (MATLAB 9.5)	Details	Details	Details	N/A	Details	Details
R2018a (MATLAB 9.4)	Details	Details	Details	N/A	Details	Details
R2017b (MATLAB 9.3)	Details	Details	Details	N/A	Details	Details
R2017a (MATLAB 9.2)	Details	Details	Details	N/A	Details	Details
R2016b (MATLAB 9.1)	Details	Details	Details	N/A	Details	Details
R2016a (MATLAB 9.0)	Details	Details	Details	N/A	Details	Details

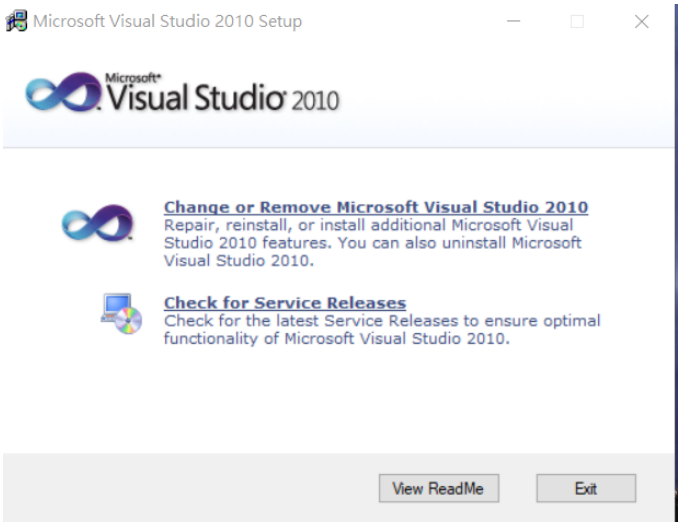
Step 4:

Install a recommended compiler according to your MATLAB version.

Compiler	MATLAB *For MEX-file compilation and external usage of MATLAB Engine and MAT-file APIs*	MATLAB Compiler *For C and C++ shared libraries*	Builder EX *For all features*	Builder NE *For all features*	Builder JA *For all features*	MATLAB Coder *For all features*	SimBiology *For accelerated computation*	Fixed-Point Designer *For accelerated computation*
lcc-win32 v2.4.1 *Included with MATLAB*	✓					✓[1]	✓	✓
Microsoft Windows SDK 7.1 *Available at no charge; requires .NET Framework 4.0*	✓	✓	✓	✓[1]		✓[1]	✓	✓
Microsoft Visual C++ 2012 Professional	✓	✓	✓	✓[1]		✓	✓	✓
Microsoft Visual C++ 2010 Professional SP1	✓	✓	✓	✓[1]		✓	✓	✓
Microsoft Visual C++ 2008 Professional SP1 [4]	✓	✓	✓	✓[1]		✓	✓	✓
Intel C++ Composer XE 2013 [2]	✓							

Step 5:

Install the compiler if not installed already. In this case, Microsoft Visual C++ 2010.



Step 6:

Launch MATLAB. Enter the “mex -setup” command to begin the default compiler setup process. Press “y” to automatically locate the installed compiler.

```
>> mex -setup

Welcome to mex -setup.  This utility will help you set up
a default compiler.  For a list of supported compilers, see
http://www.mathworks.com/support/compilers/R2013b/win64.html

Please choose your compiler for building MEX-files:

Would you like mex to locate installed compilers [y]/n?
```

Step 7:

A numbered list of available compilers is displayed. Type the number of the preferred compiler, e.g., “1”. Press “y” to confirm.

```
Would you like mex to locate installed compilers [y]/n? y

Select a compiler:
[1] Microsoft Visual C++ 2010 in C:\Program Files (x86)\Microsoft Visual Studio 10.0
[2] Microsoft Visual C++ 2008 SP1 in C:\Program Files (x86)\Microsoft Visual Studio 9.0

[0] None

Compiler: 1

Please verify your choices:

Compiler: Microsoft Visual C++ 2010
Location: C:\Program Files (x86)\Microsoft Visual Studio 10.0

Are these correct [y]/n? y
```

Step 8:

Check the results after the updates are complete.

```
Are these correct [y]/n? y

********************************************************************************
  Warning: MEX-files generated using Microsoft Visual C++ 2010 require
           that Microsoft Visual Studio 2010 run-time libraries be
           available on the computer they are run on.
           If you plan to redistribute your MEX-files to other MATLAB
           users, be sure that they have the run-time libraries.
********************************************************************************


Trying to update options file: C:\Users\TEST\AppData\Roaming\MathWorks\MATLAB\R2013b\mexopts.bat
From template:              C:\PROGRA~1\MATLAB\R2013b\bin\win64\mexopts\msvc100opts.bat

Done . . .
```

Step 9:

Download additional ADLINK MATLAB samples from the link below.

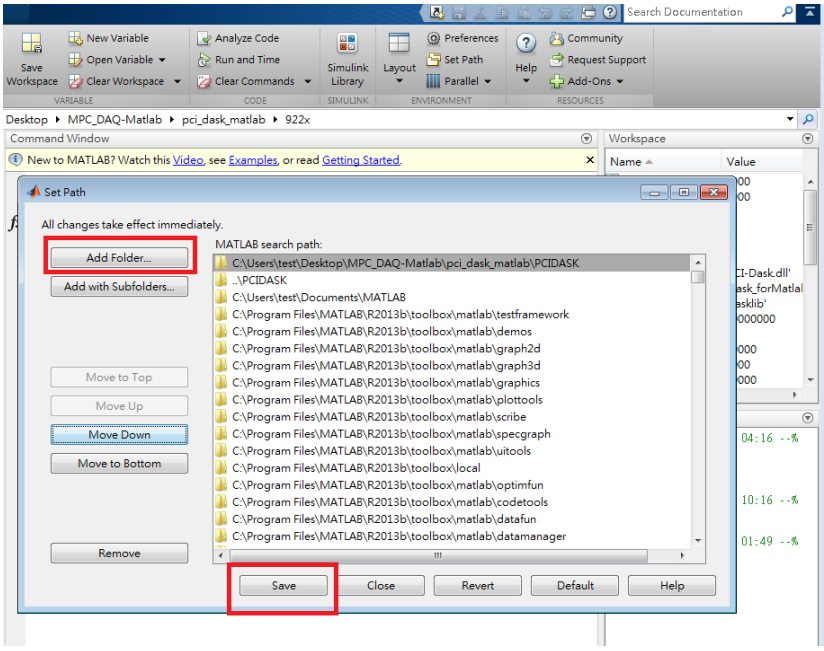
Link: https://ftp.adlinktech.com/daq/pci_dask_matlab.zip

Step 10:

Extract the contents of the zip file to a folder. To set up this new folder in MATLAB:

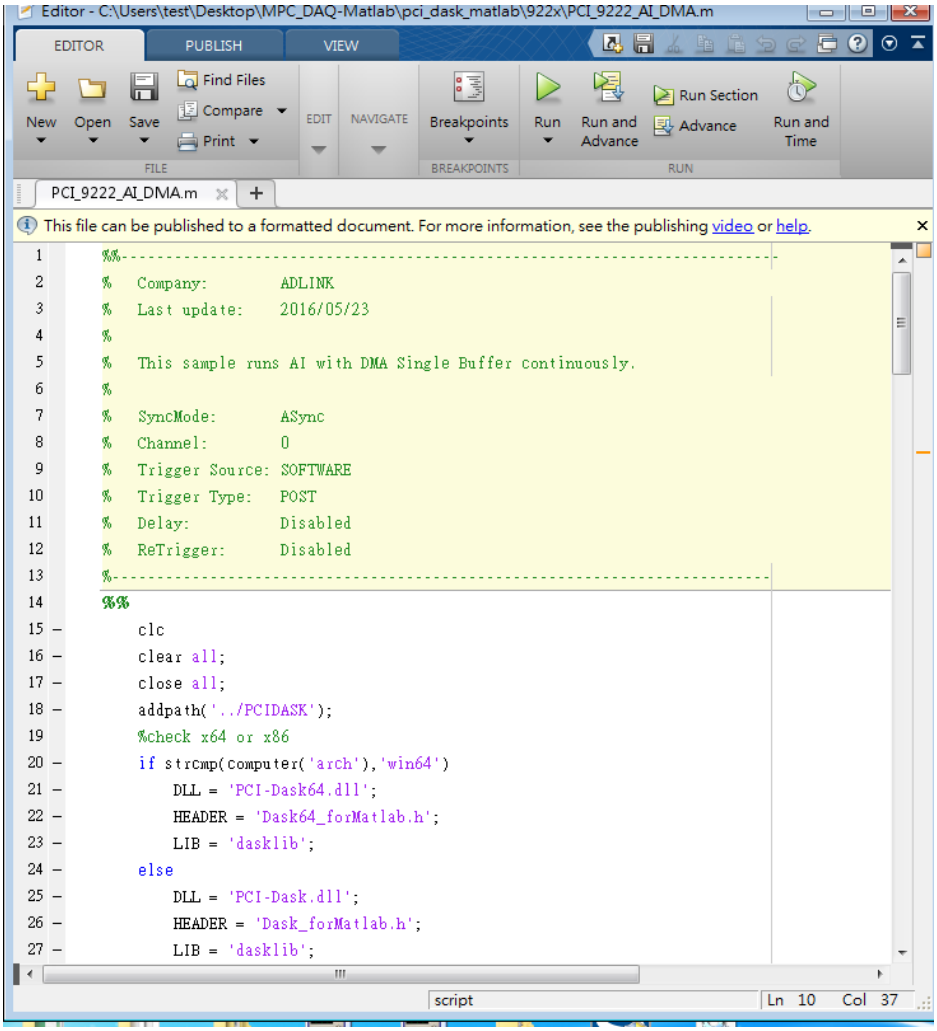
1. Open *setpath*
2. Click “Add Folder”
3. Select the folder in the MATLAB search path area
4. Click “Save”

The M file in the selected folder is now accessible from within MATLAB.



Step 11:

View the contents of the sample M file through the Editor. Modify the contents as necessary for your test. The contents of the sample M file are shown below.



Step 12:

Type the filename to run the M file, e.g., “PCI_9222_AI_DMA.m”, at the MATLAB command window prompt. The result is shown below. The card worked correctly and returned the data into MATLAB.