

## MATLAB Image Acquisition Tool Adaptor for Sentech USB Camera

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### Before using the Adaptor:

Please make sure if the driver of Sentech USB camera is installed without installing DirectShow Filter. The default adaptor of MATLAB that using DirectShow will cause Sentech adaptor cannot detect connected camera.

Please unpack the Sentech Adaptor package to the location you want before registering the adaptor in MATLAB. Note that the location of adaptor should be fixed after registered. If you want to change the location of the adaptor, you need to unregister the old setting and register it again in MATLAB.

For the develop environment that we are using for Matlab 2014a or later, it will be necessary to install the "Visual C++ Redistributable Packages for Visual Studio 2013" for necessary files used by the adaptor.

Please check <https://www.microsoft.com/en-US/download/details.aspx?id=40784> for the redistributable package of VS2013. If the package is not installed, you might met some registering issue when you trying to register the adaptor.

There are two ways of registering Adaptor of Sentech USB Camera: In command line window and in image acquisition tool:

### Register Adaptor in Command Line Window:

1. Open MATLAB. In MATLAB command window, by the version of MATLAB you use, type corresponding command below:

If you are using 32bit version of MATLAB, type:

```
imaqregister('your_directory\win32\StlmaqAdaptor.dll');
```

If you are using 64bit version of MATLAB, type:

```
imaqregister('your_directory\win64\StlmaqAdaptor_x64.dll');
```

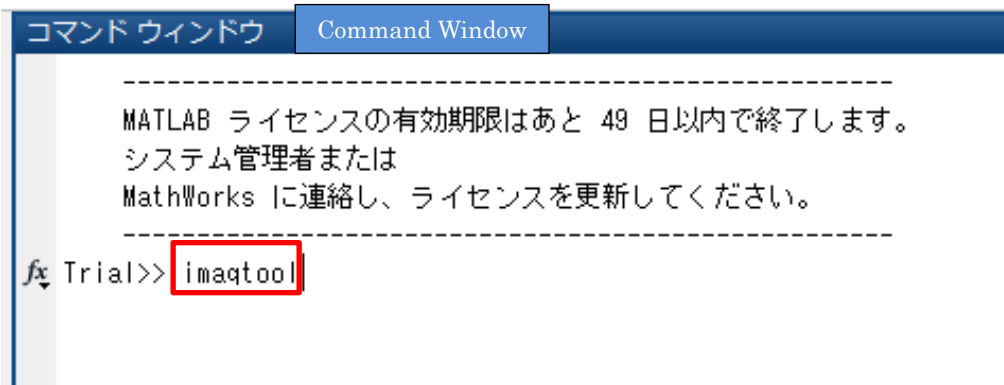
Where <your\_directory> is the location you put the Sentech Adaptor.

2. If adaptor registered with no error, type "imaqhwinfo" in command window. You should see "stimaqadaptor"(32bit situation) or "stimaqadaptor\_x64"(64bit situation) in the "InstalledAdaptors".

### Register Adaptor in Image Acquisition Tool:

1. Open MATLAB. In MATLAB command window, type "imaqtool". This will open the Image

Acquisition Tool window if you have installed the IMAQ component.

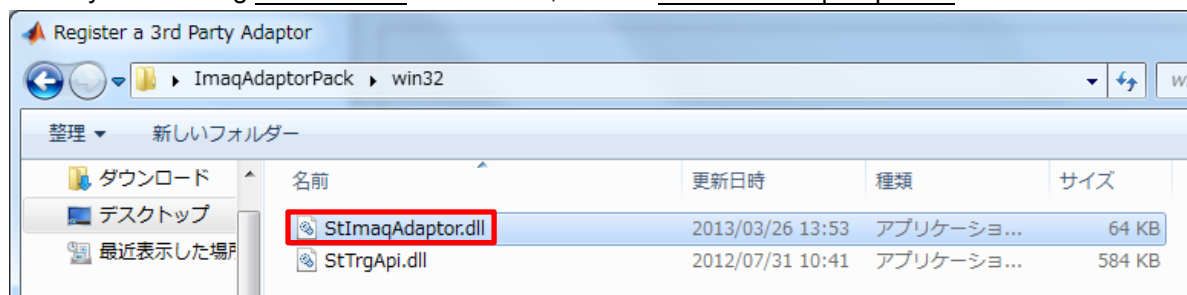


2. In Image Acquisition Tool, click Tools -> Register a Third-Party Adaptor.

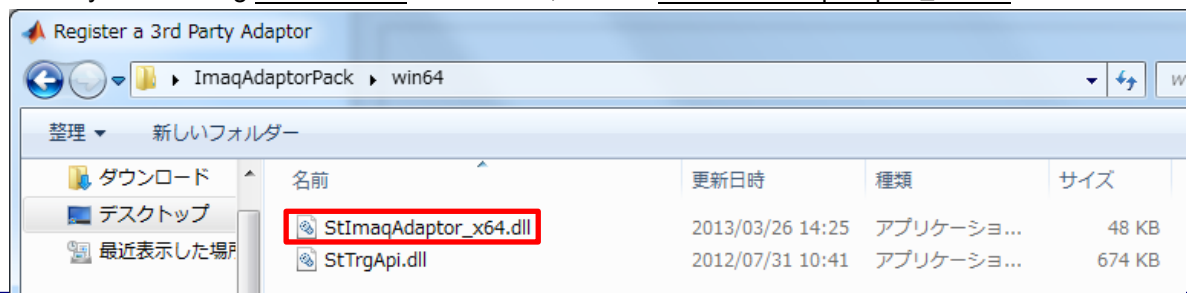


3. Navigate to the folder of Sentech Adaptor located.  
Choose adaptor by your version of MATLAB:

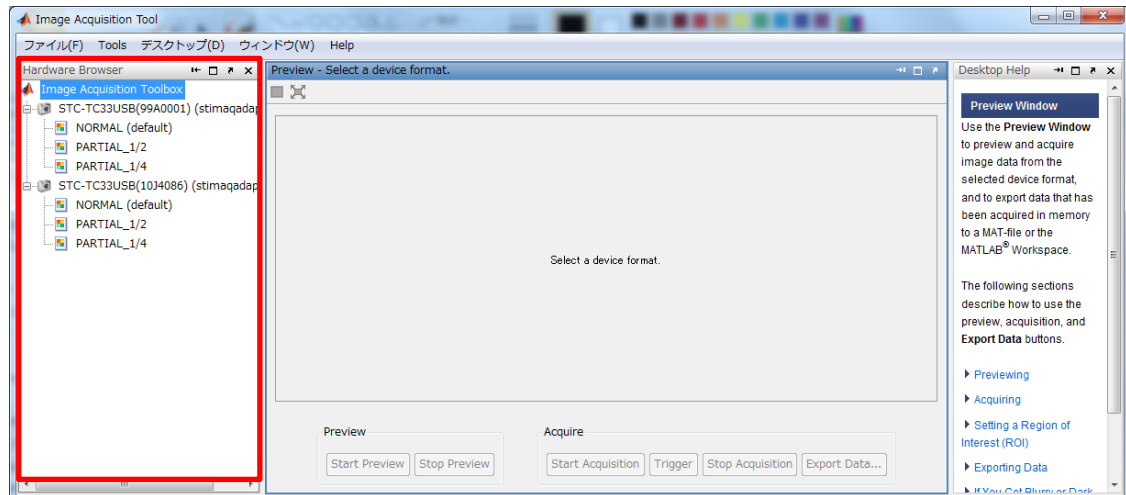
If you are using 32bit version of MATLAB, choose \win32\StImaqAdaptor.dll.



If you are using 64bit version of MATLAB, choose \win64\StImaqAdaptor\_x64.dll.



- After registering the adaptor, if you already connect the cameras with your computer, the cameras should be shown in the Hardware Browser; otherwise you need to close MATLAB, connect the camera with your computer, then re-open MATLAB again to start using cameras.



## Unregister the Adaptor:

For unregistering the adaptor, type following command in the MATLAB command window:

If you are using 32bit version of MATLAB, type:

```
imaqregister(' <your_directory>\win32\StImaqAdaptor.dll', 'unregister');
```

If you are using 64bit version of MATLAB, type:

```
imaqregister(' <your_directory>\win64\StImaqAdaptor_x64.dll', 'unregister');
```

Where <your\_directory> is the location you put the Sentech Adaptor.

## How to Test Adaptor :

You can test if the adaptor is working in two ways:

### - Test adaptor with imaq command:

- Make sure “stimaqadaptor” or “stimaqadaptor\_x64” is in the list of “InstalledAdaptors” by executing command “`imaqhwinfo`”. Also make sure the USB camera is connected.
- Open MATLAB. Create a video input object by typing command in command window

with the adaptor name matching your version of MATLAB:

```
vid = videoinput('stimaqadaptor');  
or  
vid = videoinput('stimaqadaptor_x64');
```

3. Type following command to start preview for test:

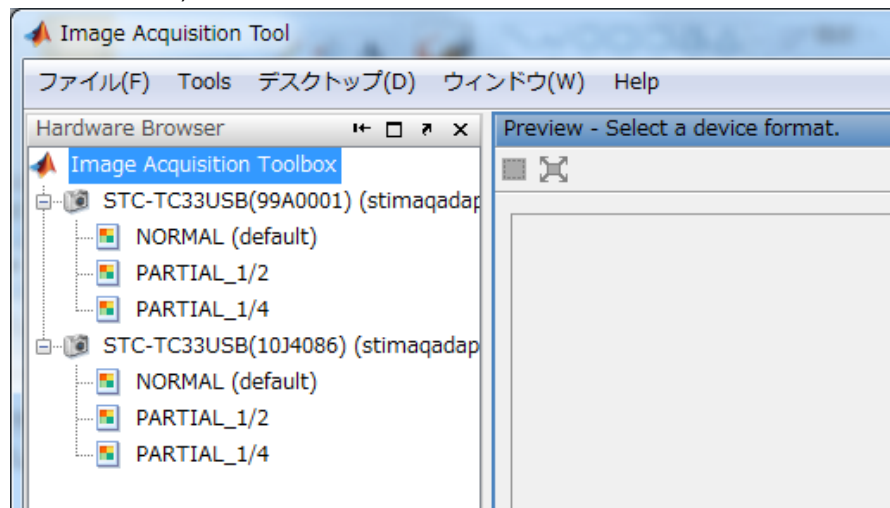
```
preview(vid);
```

The preview window should show up with preview image.

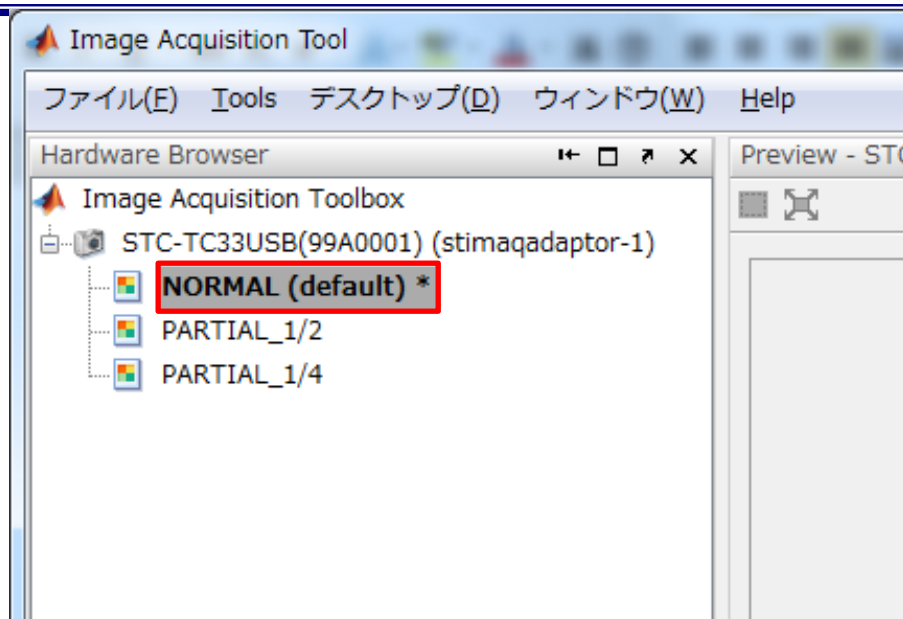
For more detail of using adaptor, please refer to Image Acquisition Toolbox User's Guide available from MATLAB.

## Test adaptor with Image Acquisition Tool:

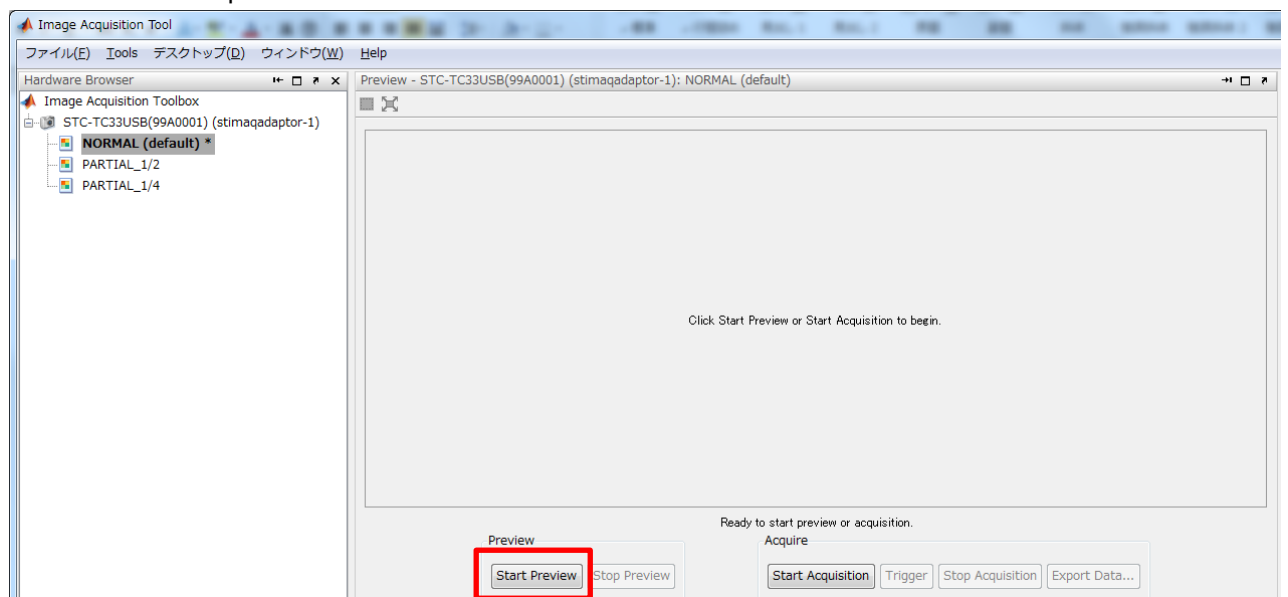
1. Open MATLAB. Make sure the USB camera is connected then type "imaqtool" in command window. This will open the Image Acquisition Tool window.
2. If the adaptor is registered and USB camera is connected, you should see the name of camera listed in the Hardware Browser window: (All Sentech USB cameras connecting to computer will be listed)



3. Click "NORMAL" below the camera you want to test, which is the default format of every camera in MATLAB:



4. Click the “Start Preview” button at the bottom of the Preview window. The preview image should show up in the Preview window.



For more detail of using adaptor and control properties, please refer to Image Acquisition Toolbox User's Guide available from MATLAB.

## **Limitation/Known issue:**

- For better implementation of hardware trigger on Sentech USB cameras, the hardware trigger functions are applied in Device Properties rather than Hardware Triggering of MATLAB.
- All formats of one camera share the same properties values; you must manually set properties whenever switched into another format to meet the correct setting value if you use Image Acquisition Tool for properties control.
- For a stable situation, prevent to switch format/camera in Hardware Browser of Image Acquisition Tool when in preview. This sometimes causes MATLAB crash.

## **Trouble shooting:**

- If you have both 32bit version of MATLAB and 64bit version of MATLAB in the same machine, they will share the same adaptor setting, but it is fine to add both of the Sentech adaptors into MATLAB.
- If cameras do not show on Hardware Browser, try to close MATLAB and any other program that is using cameras then re-open MATLAB again to see if cameras can be found. If not, you might need to reboot your platform.
- If there shows error when registering the adaptors, make sure if the StTrgApi.dll is in the same folder with Adaptor. Note the StTrgApi.dll have different versions: for 32bit Adaptor and for 64bit Adaptor.

## **Currently using SDK version:**

The adaptor is created with Sentech TriggerSDK ver 3.01.

The SDK files are included in the same folders that matching the version of adaptors. Beware that putting different version of SDK files with adaptors will cause adaptor fail to register/initial.

## **Currently tested devices:**

STC-TC33USB

STC-TB152USB