

# LJXAwrap

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LJ-X8000A Communication Library for Python programming language.

## Description

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- Works on Windows OS / Linux OS.
- The download file contains two parts:

### 1. Wrapper I/F ( LJXAwrap.py)

- Wrapper definition for calling the communication library functions from the Python programming language.
- Import this module to create your Python application.
- The dynamic link library (LJX8\_IF.dll or libljxacom.so ) is built with C++, and cannot be directly called from Python.  
This wrapper I/F makes it possible to call library functions from Python.

### 2. Sample Programs

- **sample\_ImageAcquisition.py** : This sample program demonstrates how to acquire height and luminance images from the LJ-X8000A controller. The 2D image display and height profile display are also explained in this sample.
- **sample\_HowToCallFunctions.py** : A sample collection of how to call LJXAwrap I/F functions.

## Installation

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### Windows

The Microsoft C Runtime Library is required for the DLL ( LJX8\_IF.dll ) to operate.  
The installer is in the "runtime" folder inside the downloaded zip file.  
Run vc\_redist.x64.exe to install the runtime library.

### Linux

#### (1) Build the library

After unzipping the provided file, open the top level folder.  
A shared object file ( libljxacom.so ) will be generated after the following operation.

```
$ cd ./PYTHON
$ make
```

## (2) Select the Reference Library

To select the correct library, edit the file ( LJXAwrap.py ) as follows:

**To use on Windows:** The line about Linux is commented out.

```
#####  
## Select the library according to the Operating System  
#####  
dll_name = "LJX8_IF.dll" # For Windows  
# dll_name = "libljxacom.so" # For Linux
```

**To use the Linux Library:** Uncomment the line about Linux, and comment out the line about Windows.

```
#####  
## Select the library according to the Operating System  
#####  
# dll_name = "LJX8_IF.dll" # For Windows  
dll_name = "libljxacom.so" # For Linux
```

## Function Reference

The communication library functions (LJX8IF\_...) can be used via the wrapper I/F as follows:

```
import LJXAwrap  
  
# Ethernet open  
res = LJXAwrap.LJX8IF_EthernetOpen(0, ethernetConfig)
```

- For additional details and reference, refer to the sample program.  
The wrapper behavior is done using the Python standard module "ctypes".
- For details on each function (LJX8IF\_... ),  
refer to the "*LJ-X8000A Communication Library Reference Manual*".  
This manual can be downloaded from the User Support website.  
Alternatively, if "LJ-X Navigator" is installed, the reference manual can be found in the following folder:  
"C:\Program Files\KEYENCE\LJ-X Navigator\lib\Manual"

## Sample Program ( sample\_ImageAcquisition.py )

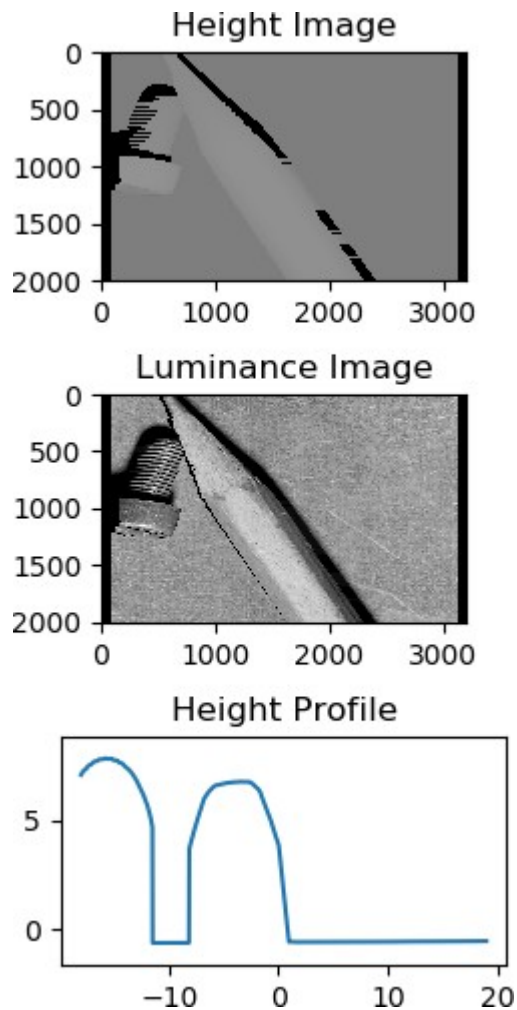
### How to run

The sample program ( sample\_ImageAcquisition.py ) is in the "PYTHON" folder inside the downloaded zip file. It contains a main routine.

```
$ python3 sample_ImageAcquisition.py
```

This is an example of how to acquire height and luminance image from the LJ-X8000A controller using high-speed communication.

After the completion of the image acquisition, the 2D images and height profile will be displayed.



## How to change operation

The operation can be changed by rewriting a part of the sample program.  
The source code is highlighted using the comments below.

```
#####  
# CHANGE THIS BLOCK TO MATCH YOUR SENSOR SETTINGS (FROM HERE)  
#####
```

Specifically, rewrite the following parameters.

- **Device id** : Identifier when using multiple heads.
- **IP address, Port number** : Network settings of the LJX8000A controller.
- **Image size in Y direction** : Number of profile lines to be acquired in each image.
- **Timeout** : Timeout error occurs if the acquiring process exceeds the set value.
- **Use external batch start** : Set "true" if you start/stop batch timing externally (e.g. terminal input).

# Sample Program ( sample\_HowToCallFunctions.py )

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## How to run

The sample program ( sample\_HowToCallFunctions.py ) is in the "PYTHON" folder inside the downloaded zip file. It contains a main routine.

```
$ python3 sample_HowToCallFunctions.py
```

## How to execute each sample code

Some sample code may change the controller settings. To prevent accidental execution, each sample code is initially set to 'False' as shown below. Set to 'True' to execute.

```
if False:
    # Example of how to change active Program No.
    # Set active program No. to '5'
    programNo_set = 5
    res = LJXAwrap.LJX8IF_ChangeActiveProgram(deviceId, programNo_set)
    print("LJXAwrap.LJX8IF_ChangeActiveProgram:", hex(res),
          "<ProgramNo_set>=", programNo_set)
```

## Third Party Software

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This library (LJXAwrap, LJX8\_IF.dll, libljax.com) itself does not contain any third party software.

Only the sample program is dynamically linked to the third party software.

The following links refer to the license or copyright associated with the third-party software.

- Python3 : ver.3.9.1 (<https://docs.python.org/3/license.html>)
- matplotlib : ver.3.3.3 (<https://matplotlib.org/users/license.html>)
- Numpy : ver.1.19.0 (<https://numpy.org/doc/stable/license.html>)
- Pillow : ver.8.0.1 (<https://pillow.readthedocs.io/en/stable/about.html#license>)

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