

# Sample Program Guide

Revision.2.3

December 9, 2016

## Introduction

This guide explains how to use this sample program.

## Usage

### **Supported camera**

D810, D810A

### **Environment**

The sample program is command prompt, runs on these environment.

## Supported Environment

OS type	Version
Windows	Windows 7 (SP1) ---- 32bit / 64bit edition( (* Ultimate, Enterprise, Professional, Home Premium, Home Basic) Windows 8.1 ---- 32bit / 64bit edition (* Windows 8.1, Pro, Enterprise) Windows 10 ---- 32bit / 64bit edition
Macintosh	Mac OS X 10.9.5 (Mavericks) Mac OS X 10.10.5 (Yosemite) Mac OS X 10.11.6 (El Capitan) macOS 10.12.1 (Sierra) * 64bit mode only (32bit mode is not supported)

### ■Restriction of Windows

The windows sample program project file supports “Microsoft Visual Studio 2013”.

### ■Restriction of Macintosh

- The Macintosh sample program project file is created with Xcode 6.2.
- LLVM version is 6.0, SDK is 10.10.

*Files*

The sample program needs following files. Copy these files on the appropriate folder and use it.

## Windows

File Name	Folder
Type0014.md3	Same as this sample program
NkdPTP.dll	Same as Type0014.md3

- If you want to change the folder of Type0014.md3, you should modify Search\_Module() function of Function.cpp.

## Macintosh

File Name	Folder
Type0014 Module.bundle	Same as this sample program
libNkPTPDraiver2.dylib	SYSTEM/Library/Application Support/Nikon/Camera Control Modules/

- If you want to change the folder of Type0014 Module.bundle, you should modify Search\_Module() function of Function.cpp.
- The meaning of SYSTEM is the directory where OS is installed.

**Main Menu**

When you start the sample program, it loads module and opens module object. Then main menu is shown.

**1) Select Device**

If some devices are connected to PC, you can choose which device will be used. Then sub menu 1 is shown.

**2) AsyncRate**

Show a recommended interval of Command\_Async.

(refer to 9.1 kNkMAIDCapability\_AsyncRate in MAID3.PDF)

**3) IsAlive**

Show the status of Module object.

(refer to 9.6 kNkMAIDCapability\_IsAlive in MAID3.PDF)

**4) Name**

Show the name of Module object.

(refer to 9.9 kNkMAIDCapability\_Name in MAID3.PDF)

**5) ModuleType**

Show the type of Module object.

(refer to 9.53 kNkMAIDCapability\_ModuleType in MAID3.PDF)

**6) Version**

Show version of MAID supported by the module.

(refer to 9.57 kNkMAIDCapability\_Version in MAID3.PDF)

**Sub Menu 1**

You can read or write the settings of the source object.

**1) Select Item Object**

If some pictures are stored in camera, you can choose which item object will be used. Then sub menu 2 is shown. ( When this menu returns the message "There is no item" though Capture command is succeeded, please retry this menu until new item object is detected.)

**2) Camera settings(1)**

You can change some camera settings. Sub menu 3 will be shown.

**3) Camera settings(2)**

You can change other camera settings. Sub menu 4 will be shown.

**4) Shooting Menu**

You can change photography settings. Sub menu 5 will be shown.

**5) Live View**

You can change Live View settings. Sub menu 6 will be shown.

**6) Custom Menu**

You can change custom settings. Sub menu 7 will be shown.

**7) Async**

Send kNkMAIDCommand\_Async to detect in camera condition.

(refer to 9.1 kNkMAIDCommand\_Async in MAID3.PDF)

**8) Autofocus**

Perform auto focus.

(refer to 4.27 kNkMAIDCapability\_AutoFocus in MAID3Type0014.PDF )

**9) Capture**

Take a picture. If you try to transfer images to PC, you must change 21)SaveMedia of Sub Menu 3 to SDRAM. When you set it to Card, the module does not notify of the addition of the item object.

(refer to 4.17 kNkMAIDCapability\_Capture in MAID3Type0014.PDF )

**10) TerminateCapture**

Terminate bulb exposure shooting and record to SDRAM the image until stopped bulb.

(refer to 3.170 kNkMAIDCapability\_TerminateCapture in MAID3Type0014.PDF)

**11) PreCapture**

Take a picture for presetting white balance.

(refer to 3.148 kNkMAIDCapability\_PreCapture in MAID3Type0014.PDF)

**Sub Menu 2**

You can read or write the settings of the item object.

**1) Select Data Object**

You can choose data object.

If image object is selected, sub menu 8 will be shown. If movie object is selected, sub menu 9 will be shown. If thumbnail object is selected, sub menu 10 will be shown.

**2) Delete**

Delete the DRAM image of Item object.

(refer to 3.153 kNkMAIDCapability\_DeleteDramImage in MAID3Type0014.PDF)

**3) IsAlive**

Show the status of this Item object.

(refer to 9.6 kNkMAIDCapability\_IsAlive in MAID3.PDF)

**4) Name**

Show the name of this Item object.

(refer to 9.9 kNkMAIDCapability\_Name in MAID3.PDF)

**5) DataTypes**

Show the data types supported by this Item object.

(refer to 9.12 kNkMAIDCapability\_DataTypes in MAID3.PDF)

**6) DateTime**

Show the date and time when this Item was created.

(refer to 9.13 kNkMAIDCapability\_DateTime in MAID3.PDF)

**7) StoredBytes**

Show the file size of this Item in bytes.

(refer to 9.14 kNkMAIDCapability\_StoredBytes in MAID3.PDF)

**Sub Menu 3**

You can read and write the detailed settings (1) of the source object.

**1) IsAlive**

Show the status of this Source object.

(refer to 9.6 kNkMAIDCapability\_IsAlive in MAID3.PDF)

**2) Name**

Show the name of this Source object.

(refer to 9.9 kNkMAIDCapability\_Name in MAID3.PDF)

**3) Interface**

Show the physical interface of this Source object.

(refer to 9.11 kNkMAIDCapability\_Interface in MAID3.PDF)

**4) DataTypes**

Show the data types supported by this Item object.

(refer to 9.12 kNkMAIDCapability\_DataTypes in MAID3.PDF)

**5) BatteryLevel**

Show battery level.

(refer to 4.47 kNkMAIDCapability\_BatteryLevel in MAID3Type0014.PDF)

**6) FlashMode**

Set the flash mode of this source.

(refer to 9.51 kNkMAIDCapability\_FlashMode in MAID3.PDF)

**7) LockFocus**

Show the status of focus lock.

(refer to 3.137 kNkMAIDCapability\_LockFocus in MAID3Type0014.PDF)

**8) LockExposure**

Show the status of exposure lock.

(refer to 3.136 kNkMAIDCapability\_LockExposure in MAID3Type0014.PDF)

**9) ExposureStatus**

Show the exposure value measured by camera.

(refer to 3.139 kNkMAIDCapability\_ExposureStatus in MAID3Type0014.PDF)

**10) ExposureMode**

Set the exposure mode of camera.

(refer to 3.119 kNkMAIDCapability\_ExposureMode in MAID3Type0014.PDF)

**11) ShutterSpeed**

Set the exposure time of camera.

(refer to 3.114 kNkMAIDCapability\_ShutterSpeed in MAID3Type0014.PDF)

**12) Aperture**

Set the aperture of camera.

(refer to 3.117 kNkMAIDCapability\_Aperture in MAID3Type0014.PDF)

**13) FlexibleProgram**

Set the flexible program of camera.

(refer to 3.115 kNkMAIDCapability\_FlexibleProgram in MAID3Type0014.PDF)

**14) ExposureComp**

Set the exposure compensation of camera.

(refer to 3.120 kNkMAIDCapability\_ExposureComp in MAID3Type0014.PDF)

**15) MeteringMode**

Set the metering mode of camera.

(refer to 3.118 kNkMAIDCapability\_MeteringMode in MAID3Type0014.PDF)

**16) FocusMode**

Show focus mode.

(refer to 3.142 kNkMAIDCapability\_FocusMode in MAID3Type0014.PDF)

**17) FocusAreaMode**

Set focus area mode.

(refer to 3.123 kNkMAIDCapability\_FocusAreaMode in MAID3Type0014.PDF)

**18) FocusPreferredArea**

Change focusing point.

(refer to 3.116 kNkMAIDCapability\_FocusPreferredArea in MAID3Type0014.PDF)

**19) FocalLength**

Show focal length(unit: mm).

(refer to 3.141 kNkMAIDCapability\_FocalLength in MAID3Type0014.PDF)

**20) ClockDateTime**

Adjust internal clock.

(refer to 3.107 kNkMAIDCapability\_ClockDateTime in MAID3Type0014.PDF)

## **21) SaveMedia**

This will set the recording media.

(refer to 3.175 kNkMAIDCapability\_SaveMedia in MAID3Type0014.PDF)

## **Sub Menu 4**

You can read and write the detailed settings (2) of the source object.

### **1) LockCamera**

Keep the camera from direct operation(not through host computer).

(refer to 3.163 kNkMAIDCapability\_LockCamera in MAID3Type0014.PDF)

### **2) LensInfo**

Show lens information(focal length and aperture).

(refer to 3.150 kNkMAIDCapability\_LensInfo in MAID3Type0014.PDF)

### **3) UserComment**

Set characters which will be written in a new picture file.

(refer to 3.104 kNkMAIDCapability\_UserComment in MAID3Type0014.PDF)

### **4) EnableComment**

Enable to add UserComment to an image file.

(refer to 3.105 kNkMAIDCapability\_EnableComment in MAID3Type0014.PDF)

### **5) IsoControl**

Set whether auto sensitivity control is used when you take a picture.

(refer to 3.42 kNkMAIDCapability\_IsoControl in MAIDType0014.PDF)

### **6) NoiseReduction**

Set whether noise reduction is used when you take a picture.

(refer to 3.43 kNkMAIDCapability\_NoiseReduction in MAIDType0014.PDF)

### **7) MirrorUpCancel (D810A only)**

Cancel the mirror up.

(refer to 3.199 kNkMAIDCapability\_MirrorUpCancel in MAIDType0014.PDF)

### **8) MirrorUpStatus (D810A only)**

Represent the status of the mirror.

(refer to 3.200 kNkMAIDCapability\_MirrorUpStatus in MAIDType0014.PDF)

### **9) MirrorUpSReleaseShootingCount (D810A only)**

Represent the number of required release for mirror up shooting.

(refer to 3.201 kNkMAIDCapability\_MirrorUpSReleaseShootingCount in MAIDType0014.PDF)

**Sub Menu 5**

You can read and write settings concerned with photography.

**1) CompressionLevel**

Set compression level of the image file created by camera.

(refer to 3.3 kNkMAIDCapability\_CompressionLevel in MAID3Type0014.PDF)

**2) ImageSize**

Set the compression level of picture.

(refer to 3.1 kNkMAIDCapability\_ImageSize in MAID3Type0014.PDF)

**3) RawImageSize**

Set the compression level of raw picture.

(refer to 3.2 kNkMAIDCapability\_RawImageSize in MAID3Type0014.PDF)

**4) WBMode**

Set white balance mode(auto/Incandescent/...).

(refer to 3.4 kNkMAIDCapability\_WBMode in MAIDType0014.PDF)

**5) Sensitivity**

Set sensitivity of camera.

(refer to 3.5 kNkMAIDCapability\_Sensitivity in MAIDType0014.PDF)

**6) WBTuneAuto**

Adjust white balance in Auto mode.

(refer to 3.10 kNkMAIDCapability\_WBTuneAuto in MAIDType0014.PDF)

**7) WBAutoType**

Set the option when the white balance auto.

(refer to 3.11 kNkMAIDCapability\_WBAutoType in MAID3Type0014.PDF)

**8) WBTuneIncandescent**

Adjust white balance in Incandescent mode.

(refer to 3.12 kNkMAIDCapability\_WBTuneIncandescent in MAIDType0014.PDF)

**9) WBFluorescentType**

Set the fluorescent type when the WBMode is "Fluorescent".

(refer to 3.13 kNkMAIDCapability\_WBFluorescentType in MAIDType0014.PDF)

**10) WBTuneFluorescent**

Adjust white balance in Fluorescent mode.

(refer to 3.14 kNkMAIDCapability\_WBTuneFluorescent in MAIDType0014.PDF)

**11) WBTuneSunny**

Adjust white balance in Sunny mode.

(refer to 3.15 kNkMAIDCapability\_WBTuneSunny in MAIDType0014.PDF)



**12) WBTuneFlash**

Adjust white balance in Flash mode.

(refer to 3.16 kNkMAIDCapability\_WBTuneFlash in MAIDType0014.PDF)

**13) WBTuneShade**

Adjust white balance in Shade mode.

(refer to 3.17 kNkMAIDCapability\_WBTuneShade in MAIDType0014.PDF)

**14) WBTuneCloudy**

Adjust white balance in Cloudy mode.

(refer to 3.18 kNkMAIDCapability\_WBTuneCloudy in MAIDType0014.PDF)

**15) WBPresetData**

Set white balance preset data to camera.

When you set preset data to camera, you have to name the file "PresetData.jpg" and put the file in this application folder in windows, or put the file in home directory in macintosh.

(refer to 3.35 kNkMAIDCapability\_WBPresetData in MAIDType0014.PDF)

**16) PictureControl**

Set and get current Picture Control.

(refer to 3.47 kNkMAIDCapability\_PictureControl in MAIDType0014.PDF)

**17) PictureControlData**

Set and get Picture Control data.

When you set Picture Control data to camera, you have to name the file "PicCtrlData.dat" and put the file in this application folder in windows, or put the file in home directory in macintosh.

(refer to 3.49 kNkMAIDCapability\_PictureControlData in MAIDType0014.PDF)

**18) GetPicCtrlInfo**

Get Picture Control information. The Picture Control information is saved as like "PicCtrlInfo.dat" in application folder in windows, or saved in home directory in macintosh.

(refer to 3.51 kNkMAIDCapability\_GetPicCtrlInfo in MAIDType0014.PDF)

**19) DeleteCustomPictureControl**

Delete Custom Picture Control.

(refer to 3.52 kNkMAIDCapability\_DeleteCustomPictureControl in MAIDType0014.PDF)

**20) PictureControlDataEx**

This will get or set the assigned Picture Control data of the second generation.

(refer to 3.50 kNkMAIDCapability\_PictureControlDataEx in MAIDType0014.PDF)

**21) MovieMeteringMode**

Set the metering mode to be used in live view video.

(refer to 3.198 kNkMAIDCapability\_MovieMeteringMode in MAIDType0014.PDF)

**Sub Menu 6**

You can read and write settings concerned with Live View.

**1) LiveViewProhibit**

Get the Live view prohibition condition.

(refer to 3.131 kNkMAIDCapability\_LiveViewProhibit in MAIDType0014.PDF)

**2) LiveViewStatus**

Start or stop Live view, and get current status of Live view.

(refer to 3.130 kNkMAIDCapability\_LiveViewStatus in MAIDType0014.PDF)

**3) LiveViewImageZoomRate**

Set the zoom rate of Live view image.

(refer to 3.132 kNkMAIDCapability\_LiveViewImageZoomRate in MAIDType0014.PDF)

**4) LiveViewImageSize**

This will set the size of “Live View image”.

(refer to 3.192 kNkMAIDCapability\_LiveViewImageSize in MAIDType0014.PDF)

**5) GetLiveViewImage**

Live view data will be got. Display information will be saved as like

“LiveView001\_H.dat” and Live view image will be saved as like “LiveView001.jpg” in application folder in windows, or in home directory in macintosh.

(refer to 3.161 kNkMAIDCapability\_GetLiveViewImage in MAIDType0014.PDF)

**6) MovRecInCardProhibit**

Get the Movie record prohibition condition.

(refer to 3.170 kNkMAIDCapability\_MovRecInCardProhibit in MAIDType0014.PDF)

**7) MovRecInCardStatus**

Start or stop Movie record, and get current status of Movie record.

(refer to 3.169 kNkMAIDCapability\_MovRecInCardStatus in MAIDType0014.PDF)

**8) SpotWBMode**

Set the ON / OFF state of waiting to acquire SpotWB.

(refer to 3.193 kNkMAIDCapability\_SpotWBMode in MAIDType0014.PDF)

**9) SpotWBMeasure**

This capability to obtain information SpotWB.

(refer to 3.194 kNkMAIDCapability\_SpotWBMeasure in MAIDType0014.PDF)

**10) SpotWBChangeArea**

This Capability is used to change the SpotWB area while waiting for SpotWB acquisition.

(refer to 3.195 kNkMAIDCapability\_SpotWBChangeArea in MAIDType0014.PDF)

**11) SpotWBResultDispEnd**

This capability to release the results of retrieving display the SpotWB.

(refer to 3.196 kNkMAIDCapability\_SpotWBResultDispEnd in MAIDType0014.PDF)

**Sub Menu 7**

You can read and write a custom setting of source object.

**1) EVInterval**

Select an interval of exposure value.

(refer to 3.80 kMAIDCapability\_EVInterval in MAIDType0014.PDF)

**2) BracketingVary**

Select a Bracketing variation.

(refer to 3.96 kMAIDCapability\_BracketingVary in MAIDType0014.PDF)

**3) ExpBaseHighlight**

Photometry mode represents the reference exposure level at the time of the highlight-weighted metering .

(refer to 3.86 kNkMAIDCapability\_ExpBaseHighlight in MAIDType0014.PDF)

**4) ElectronicFrontCurtainShutter**

Set the electronic first curtain shutter.

(refer to MAID3Type0014.PDF 3.90

kNkMAIDCapability\_ElectronicFrontCurtainShutter in MAIDType0014.PDF)

**Sub Menu 8**

You can read and write a setting of image object.

**1) IsAlive**

Show the status of this image object.

(refer to 9.6 kNkMAIDCapability\_IsAlive in MAID3.PDF)

**2) Name**

Show the name of this image object.

(refer to 9.9 kNkMAIDCapability\_Name in MAID3.PDF)

**3) StoredBytes**

Show the file size of this image file in bytes.

(refer to 9.14 kNkMAIDCapability\_StoredBytes in MAID3.PDF)

**4) Pixels**

Show the image size of this image in pixels.

(refer to 9.40 kNkMAIDCapability\_Pixels in MAID3.PDF)

**5) RawJpegImageStatus**

Show whether this image has raw and jpeg or not.

(refer to 3.159 kNkMAIDCapability\_RawJpegImageStatus in MAIDType0014.PDF)

**6) Acquire**

Get an image file. The image is saved as like "Image001.jpg" in application folder in

windows, or saved in home directory in macintosh.  
(refer to 9.19 kNkMAIDCapability\_Acquire in MAID3.PDF)

### **Sub Menu 9**

You can read and write a setting of movie object.

#### **1) IsAlive**

Show the status of this image object.  
(refer to 9.6 kNkMAIDCapability\_IsAlive in MAID3.PDF)

#### **2) Name**

Show the name of this image object.  
(refer to 9.9 kNkMAIDCapability\_Name in MAID3.PDF)

#### **3) StoredBytes**

Show the file size of this image file in bytes.  
(refer to 9.14 kNkMAIDCapability\_StoredBytes in MAID3.PDF)

#### **4) Pixels**

Show the image size of this image in pixels.  
(refer to 9.40 kNkMAIDCapability\_Pixels in MAID3.PDF)

#### **5) GetVideoImage**

Get a movie file. The movie is saved as like "Movie001.jpg" in application folder in windows, or saved in home directory in macintosh.  
(refer to 3.162 kNkMAIDCapability\_GetVideoImage in MAIDType0014.PDF)

### **Sub Menu 10**

You can read and write a setting of thumbnail object.

#### **1) IsAlive**

Show the status of this thumbnail object.  
(refer to 9.6 kNkMAIDCapability\_IsAlive in MAID3.PDF)

#### **2) Name**

Show the name of this thumbnail object.  
(refer to 9.9 kNkMAIDCapability\_Name in MAID3.PDF)

#### **3) StoredBytes**

Show the size of this thumbnail data in bytes.  
(refer to 9.14 kNkMAIDCapability\_StoredBytes in MAID3.PDF)

#### **4) Pixels**

Show the image size of this thumbnail image in pixels.  
(refer to 9.40 kNkMAIDCapability\_Pixels in MAID3.PDF)

**5) Acquire**

Get a thumbnail image data. The thumbnail is saved as like “Thumb001.raw” in application folder in windows, or saved in home directory in macintosh.

(refer to 9.19 kNkMAIDCapability\_Acquire in MAID3.PDF)

## Appendix

### ***About sample program(Macintosh)***

- When you switch between release and debug binaries, you change "Build Configuration" of "Edit Scheme" menu from Type0014CtrlSample.xcodeproj.

### ***Restriction***

- This sample program doesn't provide all of the capability Type0014 module support. About usage of the other capability, please refer the document "MAID3Type0014(E).pdf".
- This sample program doesn't care of changes in camera condition. If you want to check the camera status, you should send kNkMAIDCommand\_Async to module object periodically. If this command is carried out, change of the state of a camera will be notified by MAIDEventProc.

**History**

- Rev.2.3                      December 9, 2016
  - Environment...Update the environment of Macintosh.
  
- Rev.2.2                      February 29, 2016
  - Environment...Update the environment and restriction of Windows.
  - Sub Menu 1 9)Capture...Update notice.
  
- Rev.2.1                      November 13, 2015
  - Environment...Update the environment and restriction
  - Files...Update the PTP driver of Macintosh.
  - Sub Menu 1 9)Capture...Change description.
  
- Rev.2.0                      March 20, 2015
  - Environment...Update the environment and restriction
  - Sub Menu 5 21)...Add new capabilities.
  - Sub Menu 4 7), 8), 9)...Add new capabilities.
  
- Rev.1.1                      February 16, 2015
  - Environment...Update the environment and restriction of Macintosh.
  
- Rev.1.0                      June 23. 2014      First version