# Usage of Type0010 Module

Rev. 1.0

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## 1 Introduction

This document describes supplement things to use the module. Some of these are restriction of the current version module.

## 2 Supported camera

The Type0010 module supports D7100.

The module cannot control two or more cameras, can control one camera only.

## 3 Environment

| OS type | Version |
|---|---|
| Windows | Windows XP (SP3)<br>(※Professional, Home Edition)<br>Windows Vista (SP2) —— 32bit / 64bit(Compatibility mode)<br>(※Ultimate, Enterprise, Business, Home Premium, Home Basic)<br>Windows 7 (SP1) —— 32bit / 64bit(Compatibility mode)<br>(※Ultimate, Enterprise, Professional, Home Premium, Home Basic)<br>Windows 8 —— 32bit / 64bit(Compatibility mode) |
| Macintosh | Mac OS X 10.6.8<br>OS X 10.7.5<br>OS X 10.8.2 |

# 4 Capabilities

Client should acquire the value of each Capability once now after opening of Source object. (There is no necessity for acquiring the value every time before setting the value.) When the setting of the value is executed by kNKMAIDCommand_CapSet without acquiring the value, the value to which Client did set might not be correctly set to the camera.

## *4.1 kNkMAIDCapability_ProgressProc*

The module notifies progress information through MAIDProgress function. When the module can't compute how much the task is finished, the module will call MAIDProgress function with ulTotal = 0 and ulDone = Non-0. When the task has finished, the module will call function with ulDone = ulTotal.

## *4.2 kNkMAIDCapability_EventProc*

MAID3.1 specification says that the client doesn't have to set MAIDEvent function to kNkMAIDCapability_EventProc. But the current module assumes that the client always sets the MAIDEvent function. So if the client doesn't set MAIDEvent function to EventProc, there are following restrictions to use the module.

1) The client can't use kNkMAIDCommand_EnumChildren.

2) The client can't support lens exchange and device turn off and on.

3) The module doesn't notify changing of capability value, so the client should keep checking these values.

## *4.3 kNkMAIDCapability_Children*

The client may use this capability to enumerate the child objects. The client also can use kNkMAIDCommand_EnumChildren for same purpose. If the client doesn't set MAIDEvent function to kNkMAIDCapability_EventProc, the client should use kNkMAIDCapability_Chilren to enumerate the child objects.

### *4.4 kNkMAIDCapability_PictureControlData*

The camera decides whether the camera uses the setting value of Picture Control data, or the value that camera decides internally according to the following setting of Picture Control data.

1. QuickAdjustFlag (Color)
   If this value is valid(1), the camera uses only the value of “QuickAdjust".
   If this value is invalid(0), the camera uses the following value, “Saturation”, “Hue”, “Sharpening”,“Contrast”, “Brightness”, “CustomCurveFlag”, “CustomCurveData”, and does not use the value of“QuickAdjust”.
2. CustomCurveFlag
   If this value is “Custom Curve used”(1), the camera does not use “Contrast”, “Brightness”.
3. Toning (Monochrome)
   If this value is B&W(0), the camera does not use “ToningDensity”.
4. Contrast, Brightness, CustomCurveFlag, CustomCurveData
   If the value of kNkMAIDCapability_Active_D_Lighting is set to the value except for “Off”(3), the camera does not use “Contrast”, “Brightness”, “CustomCurveFlag”, “CustomCurveData”.

### *4.5 kNkMAIDCapability_DeleteDramImage*

The timing of deletion for DRAM image is limited to the following case. The module does not support the deletion on the timing excluding the following case.

- After issuing kNkMAIDCapability_Acquire, and before issuing kNkMAIDCommand_Close for Image Object.

  The example of the command sequence is shown to the following table.

| No | Command/Capability/Event | Object Type |
|---|---|---|
| 1 | kNkMAIDCapability_Capture | Source |
| 2 | kNkMAIDCapability_Children | Source |
| 3 | kNkMAIDCommand_Open | Item |
| 4 | kNkMAIDCapability_Children | Item |
| 5 | kNkMAIDCommand_Open | Image |
| 6 | kNkMAIDCapability_DataProc (Set) | Image |
| 7 | kNkMAIDCapability_Acquire | Image |
| 8 | kNkMAIDCommand_Async | Image |
| 9 | kNkMAIDCommand_Abort | Image |
| 10 | kNkMAIDCapability_CurrentItemID | Source |
| 11 | kNkMAIDCapability_DeleteDramImage | Source |
| 12 | kNkMAIDCapability_DataProc (Reset) | Image |
| 13 | kNkMAIDCommand_Close | Image |
| 14 | kNkMAIDCommand_Close | Item |

The execution of kNkMAIDCapability_Acquire is needed before the execution of kNkMAIDCapability_DeleteDramImage. So, in the case of small data size image, JPEG Basic, the all of image data may complete reading by the kNkMAIDCapability_Acquire before issuing of deletion command. In that case, the error doesn't occur when the deletion command is executed, but the image will be saved in client program.

When the callback function was set to kNkMAIDCapability_ProgressProc, the termination of operation will be notified with the parameter of callback function, “ulDone == ulTotal” or “ulDone == ulTotal==0”. But when the client aborts the operation by kNkMAIDCommand_Abort, the termination of operation will not be notified.

## 5 Image and Thumbnail Data

An image data file is transferred from the module through MAID Data Delivery Function. (refer to 5.27 File Data Delivery Structure and 10.3 MAID Data Delivery Function in MAID3.doc).

All thumbnail images are raw byte data in order of RGBRGBRGB…. The pixel order is from left to right and from top to bottom. The size of thumbnail image is fixed as follows. Width: 160 pixels Height: 120 pixels

The thumbnail image may not be acquired by the timing. (refer to 4.19. Acquire, MAID3Type0010.doc)

## 6 Connection with camera

If the client sends kNkMAIDCommand_Async to the module, it can know the camera is connected with PC through AddChild event for source object. When the module detects the camera is turned off, the module sends RemoveChild event for the current opened source object.

## 7 Opening object

The client can open only one object at same object type(eNkMAIDObjectType). (e.g. If there are two source object with different ID, client can open either one at the same time.)

But exceptional case, image and thumbnail object, these are belong to kNkMAIDObjectType_DataObj, can be opened at the same time, from same ID Item object.

## 8 The restriction of bulb photography

When the client shoots bulb photography with module, the maximum exposure time is 59 minutes 59 seconds. If the client shoots bulb photography with the exposure time more than maximum exposure, the shooting will not be guaranteed.

The example of the command sequence is shown to the following table.

| No | Capability,Command | Precautions |
|---|---|---|
| 1 | kNkMAIDCapability_Capture | In case of bulb photography, the return value will be kNkMAIDResult_BulbReleaseBusy |
| (2) | kNkMAIDCommand_Async | Until issue TerminateCapture, the client can issue Async optionally repeatedly. The maximum time from Capture and TerminateCapture (= the maximum exposure time) is 59 minutes 59 seconds. |
| 3 | kNkMAIDCapability_TerminateCapture | The client must issue TerminateCapture within 59 minutes 59 seconds from Capture issued. If long exposure noise reduction setting is ON, see 9.4. |

# 9 The restriction about D7100

## *9.1 Live view or during movie recording*

The following table shows the capabilities that can be set during live view or during movie recording.

The capabilities not shown in the table can not be set during live view and Operation cannot be set into.

The fields marked with "*" represent that this capability cannot be set into under certain conditions. (For details, please refer each capability fields.)

| Capability | Live View Photography | Movie Live View | Movie Recording |
|---|---|---|---|
| ImageSize | ○* | ○* | × |
| CompressionLevel | ○* | ○* | × |
| WBMode | ○* | ○* | × |
| CompressRAWEx | ○ | ○ | × |
| Sensitivity | ○* | ○* | ○* |
| WBTuneAuto | ○* | ○* | × |
| WBAutoType | ○* | ○* | × |
| WBTuneIncandescent | ○* | ○* | × |
| WBFluorescentType | ○* | ○* | × |
| WBTuneFluorescent | ○* | ○* | × |
| WBTuneSunny | ○* | ○* | × |
| WBTuneFlash | ○* | ○* | × |
| WBTuneShade | ○* | ○* | × |
| WBTuneCloudy | ○* | ○* | × |
| WBTuneColorTemp | ○* | ○* | × |
| WBTuneColorAdjust | ○* | ○* | × |
| WBTunePreset1 | ○* | ○* | × |
| WBTunePreset2 | ○* | ○* | × |
| WBTunePreset3 | ○* | ○* | × |
| WBTunePreset4 | ○* | ○* | × |
| WBTunePreset5 | ○* | ○* | × |
| WBTunePreset6 | ○* | ○* | × |
| WBPresetProtected1 | ○* | ○* | × |
| WBPresetProtected2 | ○* | ○* | × |
| WBPresetProtected3 | ○* | ○* | × |
| WBPresetProtected4 | ○* | ○* | × |
| WBPresetProtected5 | ○* | ○* | × |
| WBPresetProtected6 | ○* | ○* | × |
| WBPresetNumber | ○* | ○* | ○* |
| WBPresetName | ○* | ○* | × |
| WBPresetData | ○ | ○ | × |
| CCDDataMode | ○* | ○* | × |
| JpegCompressionPolicy | ○* | ○* | × |
| ImageColorSpace | ○* | ○* | × |
| ISOControl | ○* | ○* | × |

| | | | |
|---|---|---|---|
| NoiseReduction | ○* | ○* | × |
| NoiseReductionHiISO | ○* | ○* | × |
| Slot2ImageSaveMode | ○* | ○* | × |
| CompressRAWBitMode | ○* | ○* | × |
| PictureControl | ○* | ○* | × |
| PictureControlData | ○ | ○ | × |
| DeleteCustomPictureControl | ○ | ○ | × |
| Active_D_Lighting | ○* | ○* | × |
| ISOAutoShutterTime | ○* | ○* | × |
| ISOAutoShutterTimeAutoValue | ○* | ○* | × |
| ISOAutoHiLimit | ○* | ○* | × |
| MovieScreenSize | ○* | ○* | × |
| MovieImageQuality | ○* | ○* | × |
| MovieRecMicrophone | ○* | ○* | × |
| MovieRecMicrophoneValue | ○* | ○* | × |
| MovieRecDestination | ○* | ○* | × |
| AutoDistortion | ○* | ○* | × |
| HDRMode | ○* | ○* | × |
| HDRSmoothing | ○* | ○* | × |
| RemoteControlMode | ○* | ○* | × |
| ResetCustomSetting | ○* | ○* | × |
| AfModeAtLiveView | ○* | ○* | ○* |
| LiveViewAF | ○* | ○* | ○* |
| SensitivityInterval | ○* | ○* | × |
| EVInterval | ○* | ○* | × |
| CWMeteringDiameter | ○* | ○* | × |
| ExpBaseMatrix | ○* | ○* | × |
| ExpBaseCenter | ○* | ○* | × |
| ExpBaseSpot | ○* | ○* | × |
| ShootingSpeed | ○* | ○* | × |
| ShootingLimit | ○* | ○* | × |
| NumberingMode | ○* | ○* | × |
| ResetFileNumber | ○* | ○* | × |
| ExposureDelayEx | ○* | ○* | × |
| FlashSyncTime | ○* | ○* | × |
| FlashSlowLimit | ○* | ○* | × |
| InternalSplMode | ○* | ○* | × |
| BracketingVary | ○* | ○* | × |
| BracketingOrder | ○* | ○* | × |
| ApertureDial | ○* | ○* | × |
| ShootNoCard | ○* | ○* | × |
| UserComment | ○* | ○* | × |
| EnableComment | ○* | ○* | × |
| CameraInclinationMode | ○* | ○* | × |
| ManualSetLensNo | ○* | ○* | × |
| EnableCopyright | ○* | ○* | × |
| ArtistName | ○* | ○* | × |

| | | | |
|---|---|---|---|
| CopyrightInfo | ○* | ○* | × |
| ShutterSpeed | ○* | ○* | ○* |
| FlexibleProgram | ○* | ○* | ○* |
| Aperture | ○* | ○* | ○* |
| MeteringMode | ○* | ○* | ○* |
| ExposureMode | ○* | ○* | × |
| ExposureComp | ○* | ○* | ○* |
| ShootingMode | ○* | ○* | ○* |
| ContinuousShootingNum | ○* | ○* | ○ |
| EnableBracketing | ○* | ○* | ○* |
| AEBracketingStep | ○* | ○* | ○* |
| WBBracketingStep | ○* | ○* | ○* |
| BracketingType | ○* | ○* | ○* |
| ADLBracketingType | ○* | ○* | ○* |
| LiveViewStatus | ○* | ○* | ○* |
| LiveViewImageZoomRate | ○ | ○ | × |
| InternalFlashComp | ○* | × | × |
| ContrastAF | ○ | ○ | ○ |
| MFDriveStep | ○ | ○ | ○ |
| MFDrive | ○* | ○* | ○* |
| ContrastAFArea | ○* | ○* | ○ |
| DeleteDramImage | ○* | ○* | × |
| CurrentItemID | ○ | ○ | ○ |
| GetLiveViewImage | ○ | ○ | ○ |
| GetVideoImage | ○* | ○* | ○* |
| MovieRecInCardStatus | × | ○* | ○ |
| MovieReleaseButton | ○* | ○* | × |
| SaveMedia | ○* | ○* | × |
| ResetWBMode | ○* | ○* | × |
| LiveViewSelector | ○* | ○* | × |
| MovieShutterSpeed | × | ○* | ○* |
| MovieSensitivity | × | ○* | ○* |
| MovieExposureComp | × | ○* | ○* |
| LiveViewImageSize | ○* | ○* | × |
| TerminateCapture | ○* | ○* | × |
| SpotWBStatus | ○* | ○* | × |
| Capture | ○* | ○* | × |
| FlashMode | ○* | × | × |

### *9.2 About the detection of D7100*

When you use D7100 camera on Windows XP, Explorer (Windows) may not detect the camera properly. If this happens, turn the camera off once and turn it on again.

### *9.3 AF-F Shooting*

When shooting a Live View on a D7100 camera, Focus Point information will not be attached to the recorded images if the AF mode is set to AF-F not using Capability_ContrastAF.

The Focus Point information will be attached to the recorded images if the client issues Capability_ContrastAF then issues Capability_Capture within a second after the camera has focused while shooting a Live View with AF-F.

### *9.4 When long exposure noise reduction is ON*

In case of "Long Exposure NR" is ON, the time until the image is created from the start of exposure is twice the exposure time. The module doesn't return control until the creation of image has complete.

In case of bulb photography, image generation is started after running kNkMAIDCapability_TerminateCapture. The time to complete the generation of images from the execution of kNkMAIDCapability_TerminateCapture will need the time same as exposure time, meanwhile, the module doesn't return control

### *9.5 Auto Bracketing*

Shutter speed and Aperture cannot be changed when auto bracketing is in effect.

### *9.6 Depth-of-field preview button*

Module may not work properly while the camera's Depth-of-field preview button is pressed.

## 10 The restriction on Macintosh

After connecting your camera to your PC, please wait to start module until the memory card access lamp stops flashing.

## 11 Structure Member Alignment

The following list is structure member alignment of the module and client. In MAID3.H, there is a comment saying that all alignments are 4byte, but this value depends on platform.

## 12 History

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