Type0010 vender unique capabilities

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Nikon Corporation

1. Introduction

This document explains the vendor unique capabilities, which are used by Type0010 module (Type0010.md3, Type0010 module.bundle).

These definition values are defined in Maid3d1.h. Refer to the MAID 3.1 Specification for the details of capabilities.

NOTE) These unique capabilities may have different function at another module.

2. Supported camera

Type0010 module can control D7100 camera.

3. Vendor Unique Capabilities

The vender unique capabilities that are used by Type0010 module are described as follows.
The under line shows default value.

- Scene Modes

  In this document, the exposure mode other than P, S, A, M, and the SCENE set by Capability_SceneMode are called “Scene Modes” in D7100.

  If the exposure mode is U1 or U2 and the value of Capability_UserMode1 or Capability_ UserMode2 is “Scene Modes”, that are also called “Scene Modes”.

3.1. ImageSize

This will set the size of image. (Shooting menu)

Capability kNkMAIDCapability_ImageSize

Object types Source

ulType kNkMAIDCapType_Enum
kNkMAIDArrayType_PackedString

ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray,
kNkMAIDCapOperation_Set

Data

Capability_CCDDataMode	DX (24*16)	1.3x (18*12)
L	6000*4000	4800*3200
M	4496*3000	3600*2400
S	2992*2000	2400*1600

【During Movie Live View】

During Movie Live View, an aspect ratio changed to 16:9, so the value of this capability will be changed as fellows.

Capability_CCDDataMode	DX (24*16)	1.3x (18*12)
Capability_MovieScreenSize	1980*1080 / 30p, 25p, 24p 1280*720 / 60p, 50p	1980*1080 / 60i,50i,30p,25p,24p 1280*720 / 60p, 50p
L	6000*3368	4800*2696
M	4496*2528	3600*2024
S	2992*1680	2400*1344

When the Capability_CompressionLevel is setting “RAW”, the ulVisibility of this capability is invalid and the ulOperations is set to invalid and the current value is invalid.

※These following cases, the ulOperations cannot be set into.

- During movie recording.
- The Capability_SpotWBMode is 1 (ON).

3.2. CompressionLevel

This will select the compression level of a picture. (Shooting Menu)

Capability	kNkMAIDCapability_CompressionLevel
Object types	Source
ulType	kNkMAIDCapType_Enum kNkMAIDArrayType_PackedString
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray, kNkMAIDCapOperation_Set
Data	JPEG Basic, JPEG Normal, JPEG Fine, RAW, RAW + JPEG Basic, RAW + JPEG Normal, RAW + JPEG Fine

This capability value does not mean current setting value, but means current control value.

If [+ NEF (RAW)] function is active, this capability will returns [RAW+XXX].

If any of the following, the module does not enumerate values which include “RAW”.

- The Capability_ExposureMode is “Miniature”, “Color sketch”, “Selective color” or “Night vision” of Special Effects Modes.
- kNkMAIDCapability_HDRMode is not 0 (Off).

If any of the following, the ulOperations cannot be set into.

- During movie recording.
- The Capability_SpotWBMode is 1 (ON).

3.3. WBMode

This will select the white balance mode. (Shooting menu)

Capability	kNkMAIDCapability_WBMode
Object types	Source
ulType	kNkMAIDCapType_Enum kNkMAIDArrayType_PackedString
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray, kNkMAIDCapOperation_Set
Data	Auto, Incandescent, Fluorescent, Sunny, Flash, Shade, Cloudy, Preset1, Preset2, Preset3, Preset4, Preset5, Preset6 Color Temperature

If any of the following, the ulOperations cannot be set into.

- The Capability_ExposureMode is Scene Modes or Special Effects Modes.
- The Capability_SpotWBMode is 1 (ON).
- During movie recording.

3.4. Sensitivity

This will select the sensitivity of camera (Shooting menu)

Capability kNkMAIDCapability_Sensitivity

Object types Source

ulType kNkMAIDCapType_Enum
kNkMAIDArrayType_PackedString

ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray, kNkMAIDCapOperation_Set

Data The value which can be set is changed by the setting of Capability_SensitivityInterval.

Capability_SensitivityInterval.	
1/3 step	1/2 step
Auto 100, 125, 160, 200, 250, 320, 400, 500, 640, 800, 1000, 1250, 1600, 2000, 2500, 3200, 4000, 5000, 6400, Hi-0.3, Hi-0.7, Hi-1.0, Hi-2.0	Auto 100, 140, 200, 280, 400, 560, 800, 1100, 1600, 2200, 3200, 4500, 6400, Hi-0.5, Hi-1.0, Hi-2.0

When Capability_ExposureMode is set to “Program mode” or “Aperture priority” or “Speed priority”, or “Manual” and “Night vision” of Special Effects Modes, it can’t select “Auto”.

If any of the following, the ulOperations cannot be set into.

- The Capability_ExposureMode is “Night vision” of Special Effects Modes.
- The Capability_SpotWBMode is 1 (ON).

3.5. ResetMenuBank

This will reset the shooting menu. (Shooting menu)

Capability	kNkMAIDCapability_ResetMenuBank
Object types	Source
ulType	kNkMAIDCapType_Process
ulOperations	kNkMAIDCapOperation_Start
Data	None

When Capability_LiveViewStatus is 1(On), the ulVisibility of this capability is invalid and Error to set ulVisibility for this feature is disabled.

3.6. CompressRAWEx

This will set to record the compressed RAW data. (Shooting menu)

Capability	kNkMAIDCapability_CompressRAWEx
Object types	Source
ulType	kNkMAIDCapType_Unsigned
ulOperations	kNkMAIDCapOperation_Get,kNkMAIDCapOperation_Set, kNkMAIDCapOperation_GetDefault
Data	one of eNkMAIDCompressRAWEx 1: Compressed 2: Lossless compressed

If any of the following, the ulOperations cannot be set into.

- During movie recording.
- The Capability_SpotWBMode is 1 (ON).

3.7. WBTuneAuto

This will set the white balance adjustment when the WBMode is “Auto”. (Shooting menu)

Capability kNkMAIDCapability_WBTuneAuto

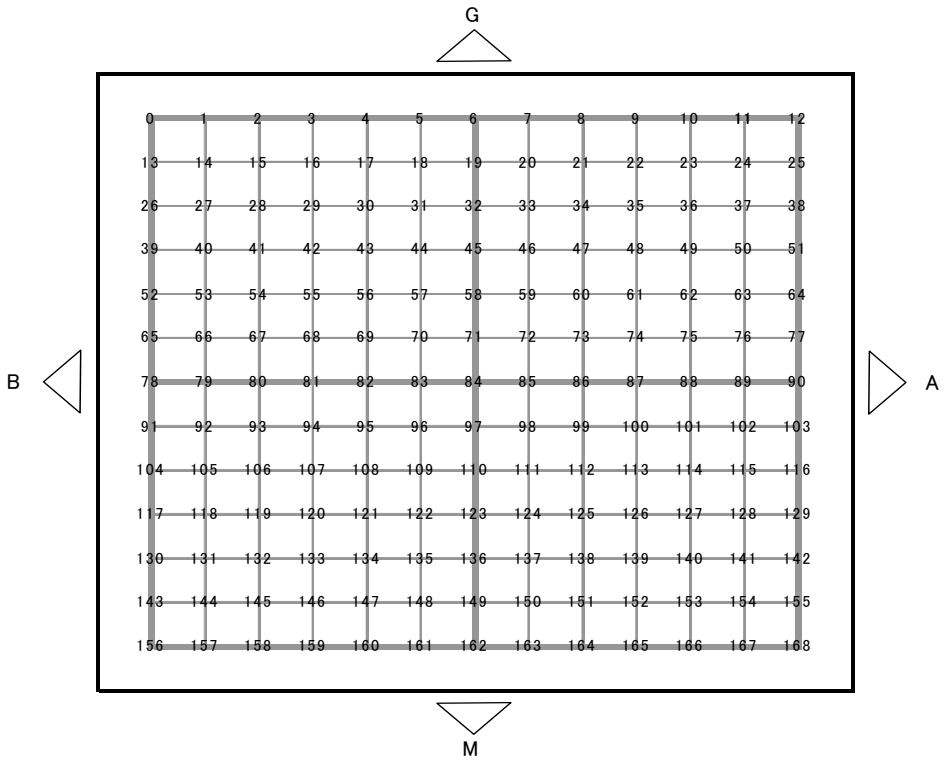
Object types Source

ulType kNkMAIDCapType_Range

ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set

Data 0 to 168 step=1 (Default: 84)

The relationship between white balance adjustment value and the coordinates is shown in following figure.



If any of the following, the ulOperations cannot be set into.

- The Capability_ExposureMode is Scene Modes or Special Effects Modes.
- During movie recording.
- The Capability_SpotWBMode is 1 (ON).

3.8. WBAutoType

This will set the option when the white balance auto. (Shooting menu)

Capability	kNkMAIDCapability_WBAutoType
Object types	Source
ulType	kNkMAIDCapType_Unsigned
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set, kNkMAIDCapOperation_GetDefault
Data	one of eNkWBAutoType 0 : Normal 1 : Keep warm lighting colors

If any of the following, the ulOperations cannot be set into.

- The Capability_ExposureMode is Scene Modes or Special Effects Modes.
- During movie recording.
- The Capability_SpotWBMode is 1 (ON).

3.9. WBTuneIncandescent

This will set the white balance adjustment when the WBMode is “Incandescent”. (Shooting menu)

Capability	kNkMAIDCapability_WBTuneIncandescent
Object types	Source
ulType	kNkMAIDCapType_Range
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set
Data	0 to 168 step=1 (Default: 84)

The relationship between white balance adjustment value and the coordinates is the same as the figure of Capability_WBTuneAuto.

If any of the following, the ulOperations cannot be set into.

- The Capability_ExposureMode is Scene Modes or Special Effects Modes.
- During movie recording.
- The Capability_SpotWBMode is 1 (ON).

3.10. WBFluorescentType

This will set the fluorescent type when the WBMode is “Fluorescent”. (Shooting menu)

Capability kNkMAIDCapability_WBFluorescentType

Object types Source

ulType kNkMAIDCapType_Unsigned

ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set, kNkMAIDCapOperation_GetDefault

Data one of eNkWBFluorescentType

0: Sodium-vapor lamps

1: Warm-white fluorescent

2: White fluorescent

3: Cool-white fluorescent

4: Day white fluorescent

5: Daylight fluorescent

6: High temp.mercury-vapor

If any of the following, the ulOperations cannot be set into.

- The Capability_ExposureMode is Scene Modes or Special Effects Modes.
- During movie recording.
- The Capability_SpotWBMode is 1 (ON).

3.11. WBTuneFluorescent

This will set the white balance adjustment when the WBMode is “Fluorescent”. (Shooting menu)

Capability kNkMAIDCapability_WBTuneFluorescent

Object types Source

ulType kNkMAIDCapType_Range

ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set

Data 0 to 168 step=1 (Default: 84)

The relationship between white balance adjustment value and the coordinates is the same as the figure of Capability_WBTuneAuto.

If any of the following, the ulOperations cannot be set into.

- The Capability_ExposureMode is Scene Modes or Special Effects Modes.
- During movie recording.
- The Capability_SpotWBMode is 1 (ON).

3.12. WBTuneSunny

This will set the white balance adjustment when the WBMode is “Sunny”. (Shooting menu)

Capability kNkMAIDCapability_WBTuneSunny

Object types Source

ulType kNkMAIDCapType_Range

ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set

Data 0 to 168 step=1 (Default: 84)

The relationship between white balance adjustment value and the coordinates is the same as the figure of Capability_WBTuneAuto.

If any of the following, the ulOperations cannot be set into.

- The Capability_ExposureMode is Scene Modes or Special Effects Modes.
- During movie recording.
- The Capability_SpotWBMode is 1 (ON).

3.13. WBTuneFlash

This will set the white balance adjustment when the WBMode is “Flash”. (Shooting menu)

Capability kNkMAIDCapability_WBTuneFlash

Object types Source

ulType kNkMAIDCapType_Range

ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set

Data 0 to 168 step=1 (Default: 84)

The relationship between white balance adjustment value and the coordinates is the same as the figure of Capability_WBTuneAuto.

If any of the following, the ulOperations cannot be set into.

- The Capability_ExposureMode is Scene Modes or Special Effects Modes.
- During movie recording.
- The Capability_SpotWBMode is 1 (ON).

3.14. WBTuneShade

This will set the white balance adjustment when the WBMode is “Shade”. (Shooting menu)

Capability kNkMAIDCapability_WBTuneShade

Object types Source

ulType kNkMAIDCapType_Range

ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set

Data 0 to 168 step=1 (Default: 84)

The relationship between white balance adjustment value and the coordinates is the same as the figure of Capability_WBTuneAuto.

If any of the following, the ulOperations cannot be set into.

- The Capability_ExposureMode is Scene Modes or Special Effects Modes.
- During movie recording.
- The Capability_SpotWBMode is 1 (ON).

3.15. WBTuneCloudy

This will set the white balance adjustment when the WBMode is “Cloudy”. (Shooting menu)

Capability kNkMAIDCapability_WBTuneCloudy

Object types Source

ulType kNkMAIDCapType_Range

ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set

Data 0 to 168 step=1 (Default: 84)

The relationship between white balance adjustment value and the coordinates is the same as the figure of Capability_WBTuneAuto.

If any of the following, the ulOperations cannot be set into.

- The Capability_ExposureMode is Scene Modes or Special Effects Modes.
- During movie recording.
- The Capability_SpotWBMode is 1 (ON).

3.16. WBTuneColorTemp

This will set the white balance adjustment when the WBMode is “Color Temperature”. (Shooting menu)

Capability kNkMAIDCapability_WBTuneColorTemp

Object types Source

ulType kNkMAIDCapType_Enum

kNkMAIDArrayType_Unsigned

ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray, kNkMAIDCapOperation_Set

Data one of eNkMAIDWBTuneColorTemp (Default: 5000K)

Index	eNkMAIDWBTuneColorTemp	Index	eNkMAIDWBTuneColorTemp
0	2500	16	4170
1	2560	17	4350
2	2630	18	4550
3	2700	19	4760
4	2780	20	5000
5	2860	21	5260
6	2940	22	5560
7	3030	23	5880
8	3130	24	6250
9	3230	25	6670
10	3330	26	7140
11	3450	27	7690
12	3570	28	8330
13	3700	29	9090
14	3850	30	10000
15	4000		

If any of the following, the ulOperations cannot be set into.

- The Capability_ExposureMode is Scene Modes or Special Effects Modes.
- During movie recording.
- The Capability_SpotWBMode is 1 (ON).

3.17. WBTuneColorAdjust

This will set the white balance adjustment when the WBMode is “Color Temperature”. (Shooting menu)

Capability kNkMAIDCapability_WBTuneColorAdjust
Object types Source
ulType kNkMAIDCapType_Range
ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set
Data 0 to 168 step=1 (Default: 84)

If the value of color temperature is set under 2500K, or over 10000K by this capability and Capability_WBTuneColorTempEx, the camera returns kNkMAIDResult_DeviceBusy.

If any of the following, the ulOperations cannot be set into.

- The Capability_ExposureMode is Scene Modes or Special Effects Modes.
- During movie recording.
- The Capability_SpotWBMode is 1 (ON).

3.18. WBTunePreset1

This will set the white balance adjustment when the WBMode is “Preset1”.
(Shooting menu)

Capability kNkMAIDCapability_WBTunePreset1
Object types Source
ulType kNkMAIDCapType_Range
ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set
Data 0 to 168 step=1 (Default: 84)

The relationship between white balance adjustment value and the coordinates is the same as the figure of Capability_WBTuneAuto.

If any of the following, the ulOperations cannot be set into.

- The Capability_ExposureMode is Scene Modes or Special Effects Modes.
- The kNkMAIDCapabilityWbTunePresetProtect1 is 1 (ON).
- The Capability_SpotWBMode is 1 (ON).
- During movie recording.
- When set to a value other than “Preset1" setting value of Capability_WBMode.

3.19. WBTunePreset2

This will set the white balance adjustment when the WBMode is “Preset2”. (Shooting menu)

Capability	kNkMAIDCapability_WBTunePreset2
Object types	Source
ulType	kNkMAIDCapType_Range
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set
Data	0 to 168 step=1 (Default: 84)

The relationship between white balance adjustment value and the coordinates is the same as the figure of Capability_WBTuneAuto.

If any of the following, the ulOperations cannot be set into.

- The Capability_ExposureMode is Scene Modes or Special Effects Modes.
- The kNkMAIDCapabilityWbTunePresetProtect2 is 1 (ON).
- The Capability_SpotWBMode is 1 (ON).
- During movie recording.
- When set to a value other than “Preset2" setting value of Capability_WBMode.

3.20. WBTunePreset3

This will set the white balance adjustment when the WBMode is “Preset3”.
(Shooting menu)

Capability	kNkMAIDCapability_WBTunePreset3
Object types	Source
ulType	kNkMAIDCapType_Range
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set
Data	0 to 168 step=1 (Default: 84)

The relationship between white balance adjustment value and the coordinates is the same as the figure of Capability_WBTuneAuto.

If any of the following, the ulOperations cannot be set into.

- The Capability_ExposureMode is Scene Modes or Special Effects Modes.
- The kNkMAIDCapabilityWbTunePresetProtect3 is 1 (ON).
- The Capability_SpotWBMode is 1 (ON).
- During movie recording.
- When set to a value other than “Preset3" setting value of Capability_WBMode.

3.21. WBTunePreset4

This will set the white balance adjustment when the WBMode is “Preset4”.

(Shooting menu)

Capability	kNkMAIDCapability_WBTunePreset4
Object types	Source
ulType	kNkMAIDCapType_Range
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set
Data	0 to 168 step=1 (Default: 84)

The relationship between white balance adjustment value and the coordinates is the same as the figure of Capability_WBTuneAuto.

If any of the following, the ulOperations cannot be set into.

- The Capability_ExposureMode is Scene Modes or Special Effects Modes.
- The kNkMAIDCapabilityWbTunePresetProtect4 is 1 (ON).
- The Capability_SpotWBMode is 1 (ON).
- During movie recording.
- When set to a value other than “Preset4" setting value of Capability_WBMode.

3.22. WBTunePreset5

This will set the white balance adjustment when the WBMode is “Preset5”.

(Shooting menu)

Capability	kNkMAIDCapability_WBTunePreset5
Object types	Source
ulType	kNkMAIDCapType_Range
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set
Data	0 to 168 step=1 (Default: 84)

The relationship between white balance adjustment value and the coordinates is the same as the figure of Capability_WBTuneAuto.

If any of the following, the ulOperations cannot be set into.

- The Capability_ExposureMode is Scene Modes or Special Effects Modes.
- The kNkMAIDCapabilityWbTunePresetProtect5 is 1 (ON).
- The Capability_SpotWBMode is 1 (ON).
- During movie recording.
- When set to a value other than “Preset5" setting value of Capability_WBMode.

3.23. WBTunePreset6

This will set the white balance adjustment when the WBMode is “Preset6”.
(Shooting menu)

Capability	kNkMAIDCapability_WBTunePreset6
Object types	Source
ulType	kNkMAIDCapType_Range
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set
Data	0 to 168 step=1 (Default: 84)

The relationship between white balance adjustment value and the coordinates is the same as the figure of Capability_WBTuneAuto.

If any of the following, the ulOperations cannot be set into.

- The Capability_ExposureMode is Scene Modes or Special Effects Modes.
- The kNkMAIDCapabilityWbTunePresetProtect6 is 1 (ON).
- The Capability_SpotWBMode is 1 (ON).
- During movie recording.
- When set to a value other than “Preset6" setting value of Capability_WBMode.

3.24. WBPresetProtect1

This will set the protection of white balance Preset1. (Shooting menu)

Capability	kNkMAIDCapability_WBPresetProtect1
Object types	Source
ulType	kNkMAIDCapType_Unsigned
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetDefault, kNkMAIDCapOperation_Set
Data	one of eNkMAIDWBPresetProtect1 0: Off 1: On

If any of the following, the ulOperations cannot be set into.

- The Capability_ExposureMode is Scene Modes or Special Effects Modes.
- During movie recording.
- The Capability_SpotWBMode is 1 (ON).

3.25. WBPresetProtect2

This will set the protection of white balance Preset2. (Shooting menu)

Capability	kNkMAIDCapability_WBPresetProtect2
Object types	Source
ulType	kNkMAIDCapType_Unsigned
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetDefault, kNkMAIDCapOperation_Set
Data	one of eNkMAIDWBPresetProtect2 0: Off 1: On

If any of the following, the ulOperations cannot be set into.

- The Capability_ExposureMode is Scene Modes or Special Effects Modes.
- During movie recording.
- The Capability_SpotWBMode is 1 (ON).

3.26. WBPresetProtect3

This will set the protection of white balance Preset3. (Shooting menu)

Capability	kNkMAIDCapability_WBPresetProtect3
Object types	Source
ulType	kNkMAIDCapType_Unsigned
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetDefault, kNkMAIDCapOperation_Set
Data	one of eNkMAIDWBPresetProtect3 0: Off 1: On

If any of the following, the ulOperations cannot be set into.

- The Capability_ExposureMode is Scene Modes or Special Effects Modes.
- During movie recording.
- The Capability_SpotWBMode is 1 (ON).

3.27. WBPresetProtect4

This will set the protection of white balance Preset4. (Shooting menu)

Capability	kNkMAIDCapability_WBPresetProtect4
Object types	Source
ulType	kNkMAIDCapType_Unsigned
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetDefault, kNkMAIDCapOperation_Set
Data	one of eNkMAIDWBPresetProtect4 0: Off 1: On

If any of the following, the ulOperations cannot be set into.

- The Capability_ExposureMode is Scene Modes or Special Effects Modes.
- During movie recording.
- The Capability_SpotWBMode is 1 (ON).

3.28. WBPresetProtect5

This will set the protection of white balance Preset5. (Shooting menu)

Capability	kNkMAIDCapability_WBPresetProtect5
Object types	Source
ulType	kNkMAIDCapType_Unsigned
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetDefault, kNkMAIDCapOperation_Set
Data	one of eNkMAIDWBPresetProtect5 0: Off 1: On

If any of the following, the ulOperations cannot be set into.

- The Capability_ExposureMode is Scene Modes or Special Effects Modes.
- During movie recording.
- The Capability_SpotWBMode is 1 (ON).

3.29. WBPresetProtect6

This will set the protection of white balance Preset6. (Shooting menu)

Capability	kNkMAIDCapability_WBPresetProtect6
Object types	Source
ulType	kNkMAIDCapType_Unsigned
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetDefault, kNkMAIDCapOperation_Set
Data	one of eNkMAIDWBPresetProtect6 0: Off 1: On

If any of the following, the ulOperations cannot be set into.

- The Capability_ExposureMode is Scene Modes or Special Effects Modes.
- During movie recording.
- The Capability_SpotWBMode is 1 (ON).

3.30. WBPresetNumber

This will set the preset number referenced by the Capability_PreCapture, Capability_WBGainRed,Capability_WBGainBlue. (Shooting menu)

Capability	kNkMAIDCapability_WBPresetNumber
Object types	Source
ulType	kNkMAIDCapType_Enum kNkMAIDArrayType_PackedString
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray, kNkMAIDCapOperation_Set
Data	Preset 1, Preset 2, Preset 3, Preset 4, Preset 5, Preset 6

If any of the following, the ulOperations cannot be set into.

- The Capability_ExposureMode is Scene Modes or Special Effects Modes.
- The Capability_SpotWBMode is 1 (ON).

3.31. WBPresetName

This will set the name of white balance preset data. (Shooting menu)

Capability	kNkMAIDCapability_WBPresetName
Object types	Source
ulType	kNkMAIDCapType_String kNkMAIDCapType_Array
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set, kNkMAIDCapOperation_GetArray
Data	NkMAIDArray

When the client sends to the module kNkMAIDCapOperation_GetArray, the module set string array of the name of white balance preset data to "NkMAIDArray.pData" in order of Preset1-6.
If the client set string longer than 36 bytes, the module uses 36 bytes from the head. The character, which can be included in the string, is only an ASCII 90 characters.(refer to the table in the ShootingBankName.)
When the other character is set, the module returns an error (kNkMAIDResult_ValueOutOfBounds).

SP	!	"	#	$	%	&	'	(	)	*	+	,	-	.	/
:	;	<	=	>	?	@	[	]	_	{	}				
0	1	2	3	4	5	6	7	8	9						
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Q	R	S	T	U	V	W	X	Y	Z						
a	b	c	d	E	f	g	h	i	j	k	l	m	n	o	p
q	r	s	t	U	v	w	x	y	z						

When set to the white balance preset data with Capability_WBPresetProtectX setting is On(1), this capability returns kNkMAIDResult_NotSupported.

If any of the following, the ulOperations cannot be set into.

- The Capability_ExposureMode is Scene Modes or Special Effects Modes.
- During movie recording.
- The Capability_SpotWBMode is 1 (ON).

3.32. WBPresetData

This will set the white balance preset data to the camera. (Shooting menu)

Capability kNkMAIDCapability_WBPresetData

Object types Source

ulType kNkMAIDCapType_Generic

ulOperations kNkMAIDCapOperation_Set

Data pointer to NkMAIDWBPresetData structure

```
typedef struct tagNkMAIDWBPresetData
{
    ULONG   ulPresetNumber;------ preset number
    ULONG   ulPresetGain;---------- gain value
    ULONG   ulThumbnailSize;----- the thumbnail size set to "pThumbnailData"
    ULONG   ulThumbnailRotate;-- (This member is not used)
    void*   pThumbnailData;---------- the pointer to the thumbnail data to be set.
} NkMAIDWBPresetData, FAR* LPNkMAIDWBPresetData;
```

When the client sends kNkMAIDCapOperation_Set to the module, the client must to set all the member of "NkMAIDWBPresetData" structure without "ulThumbnailRotate".

When the client sends kNkMAIDCapOperation_Get to the module, the client must set "ulPresetNumber", and the module sets the gain value to "ulPresetGain" correspondence with the number of "ulPresetNumber".

The member "ulThumbnailSize" and "pThumbnailData" of "NkMAIDWBPresetData" structure is used only for kNkMAIDCapOperation_Set.

The red gain value is set to the upper 2 bytes, the blue gain value is set to the lower 2 bytes of "ulPresetGain".

The both of red and blue gain value is expressed by the 8.8 format fixed-point number. (e.g. 1.5 → gain value: 0x0180) The range of gain value is $0 \leq$ gain value < 8 (0x0000 -0x07FF).

The thumbnail data set to "pThumbnailData" must be match the following requirement.

- Theimage data is Jpeg.
- The size of image is 160 * 120.
- The quality of image is Fine (1/4 compressed).
- The size of image is below 13440 bytes.
- The image cannot include the tag except the following table.

When during movie recording, the ulOperations of this capability cannot be set into.

SOI	Start Of Image
DQT	Define Quantization Table
DHT	Define Huffman Table
SOF	Start of Frame
SOS	Start of Scan
	Entropy Coded Data (JPEG data)
EOI	End Of Image

3.33. WBGainRed

This will get the gain red of white balance preset data selected by the Capability_WBPresetNumber. (Shooting menu)

Capability kNkMAIDCapability_WBGainRed
Object types Source
ulType kNkMAIDCapType_Range
ulOperations kNkMAIDCapOperation_Get
Data Min: 0 Max: 7.9661 (2047/256)
Step: 0.0039 (1/256) (Default: 1)

3.34. WBGainBlue

This will get the gain blue of white balance preset data selected by the Capability_WBPresetNumber. (Shooting menu)

Capability kNkMAIDCapability_WBGainBlue
Object types Source
ulType kNkMAIDCapType_Range
ulOperations kNkMAIDCapOperation_Get
Data Min: 0 Max: 7.9661 (2047/256)
Step: 0.0039 (1/256) (Default: 1)

3.35. CCDDataMode

This will set how to read data from CCD. (Shooting menu)

Capability	kNkMAIDCapability_CCDDataMode
Object types	Source
ulType	kNkMAIDCapType_Unsigned
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set, kNkMAIDCapOperation_GetDefault
Data	one of eNkMAIDCCDDataMode 4 : DX format 7 : 1.3x

If any of the following, the ulOperations cannot be set into.

- During movie recording.
- The Capability_SpotWBMode is 1 (ON).

3.36. JpegCompressionPolicy

This will set the algorithm when image data is compressed to Jpeg data. (Shooting menu)

Capability	kNkMAIDCapability_JpegCompressionPolicy
Object types	Source
ulType	kNkMAIDCapType_Unsigned
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set, kNkMAIDCapOperation_GetDefault
Data	one of eNkMAIDJpegCompressionPolicy 0: Size priority 1: Optimal quality

If any of the following, the ulOperations cannot be set into.

- During movie recording.
- The Capability_SpotWBMode is 1 (ON).

3.37. ImageColorSpace

This will set color space. (Shooting menu)

Capability	kNkMAIDCapability_ImageColorSpace
Object types	Source
ulType	kNkMAIDCapType_Unsigned
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set, kNkMAIDCapOperation_GetDefault
Data	one of eNkMAIDImageColorSpace 0 : sRGB, 1 : AdobeRGB

If any of the following, the ulOperations cannot be set into.

- During movie recording.
- The Capability_SpotWBMode is 1 (ON).

3.38. IsoControl

This will set whether auto sensitivity control is used when you take a picture. (Shooting menu)

Capability	kNkMAIDCapability_IsoControl
Object types	Source
ulType	kNkMAIDCapType_Boolean
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set, kNkMAIDCapOperation_GetDefault
Data	True: used False: not used

When this capability value is set to True, ISO is controlled automatically by the camera in taking picture.

If any of the following, the ulOperations cannot be set into.

- The Capability_ExposureMode is Scene Modes or Special Effects Modes.
- During movie recording.
- The Capability_SpotWBMode is 1 (ON).

3.39. NoiseReduction

This will set whether noise reduction is used or not used. (Shooting menu)

Capability	kNkMAIDCapability_NoiseReduction
Object types	Source
ulType	kNkMAIDCapType_Boolean
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set, kNkMAIDCapOperation_GetDefault
Data	True: used False: not used

If any of the following, the ulOperations cannot be set into.

- The Capability_ExposureMode is “Night vision” of Special Effects Modes.
- During movie recording.
- The Capability_SpotWBMode is 1 (ON).

3.40. NoiseReductionHighISO

This will set whether noise reduction is used or not used when high ISO. (Shooting menu)

Capability	kNkMAIDCapability_NoiseReductionHighISO
Object types	Source
ulType	kNkMAIDCapType_Unsigned
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set, kNkMAIDCapOperation_GetDefault
Data	one of eNkMAIDNoiseReductionHighISO 0: OFF 1: ON (Normal) 2: ON (High) 3: ON (Low)

If any of the following, the ulOperations cannot be set into.

- When the Capability_ExposureMode is “Night vision” of Special Effects Modes.
- During movie recording.
- The Capability_SpotWBMode is 1 (ON).

3.41. Slot2ImageSaveMode

This will select the role of secondary card slot. (Shooting menu)

Capability	kNkMAIDCapability_Slot2ImageSaveMode
Object types	Source
ulType	kNkMAIDCapType_Unsigned
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetDefault, kNkMAIDCapOperation_Set
Data	one of eNkMAIDSlot2ImageSaveMode 0: Overflow 1: Backup 2: RAW Slot 1 – JPEG Slot 2

If any of the following, the ulOperations cannot be set into.

- During movie recording.
- The Capability_SpotWBMode is 1 (ON).

3.42. CompressRAWBitMode

This will select bit depth for RAW(NEF). (Shooting menu)

Capability	kNkMAIDCapability_CompressRAWBitMode
Object types	Source
ulType	kNkMAIDCapType_Unsigned
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetDefault, kNkMAIDCapOperation_Set
Data	one of eNkMAIDCompressRAWBitMode 0: 12-bit 1: 14-bit

If any of the following, the ulOperations cannot be set into.

- During movie recording.
- The Capability_SpotWBMode is 1 (ON).

3.43. PictureControl

This will select Picture Control. (Shooting menu)

Capability	kNkMAIDCapability_PictureControl
ulType	kNkMAIDCapType_Enum
	kNkMAIDArrayType_Unsigned
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray,
	kNkMAIDCapOperation_Set
Data	one of eNkMAIDPictureControl
	0: Undefined Picture Control
	1: Standard
	2: Neutral
	3: Vivid
	4: Monochrome
	5: Portrait
	6: Landscape
	101 - 104: Option Picture Control 1 - 4
	201 - 209: Custom Picture Control 1 – 9

This capability shows the current selected Picture Control.

When the client sends kNkMAIDCapOperation_GetArray, the module returns the all Picture control enumeration value including unused Custom Picture Control.

The client can know whether the Picture Control is used or not by checking “CustomFlag” in Picture Control Data format.(see Capability_PictureControldata)

When the client sends kNkMAIDCapOperation_Set with unused Picture Control, the module returns kNkMAIDResult_DeviceBusy.

When the Picture Control selected currently is changed, kNkMAIDEvent_CapChangeValueOnly is issued about this capability. And when the content of Picture Control data is changed, kNkMAIDEvent_CapChange is issued about Capability_ChangedPictureControl.

If any of the following, the ulOperations cannot be set into.

- The Capability_ExposureMode is Special Effects Modes.
- During movie recording.
- The Capability_SpotWBMode is 1 (ON).

3.44. ChangedPictureControl

This will enumerate the Picture Control item, which is the content, is changed.

Capability	kNkMAIDCapability_ChangedPictureControl
ulType	kNkMAIDCapType_Enum
	kNkMAIDArrayType_Unsigned
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray,
Data	one of eNkMAIDPictureControl

When the Picture Control is modified by the following factor, this capability reports the list of modified Picture Control to the client by kNkMAIDCapOperation_GetArray.

- The Picture Control was changed by edit.
- The Custom Picture Control was saved.
- The Custom Picture Control was deleted.
- The Custom Picture Control was renamed.

The current value of this capability shows the last modified Picture Control.

After the client gets the list of modified Picture Control by kNkMAIDCapOperation_GetArray, the module resets the enumeration data and the current value of this capability will be reset to 0 , and the list of modified Picture Control will be deleted.

When the Picture Control is reset, kNkMAIDEvent_CapChange is not issued.

3.45. PictureControlData

This will get or edit or resist Picture Control data; (Shooting menu)

Capability kNkMAIDCapability_PictureControlData

Object types Source

ulType kNkMAIDCapType_Generic

ulOperations kNkMAIDCapOperation_Set, kNkMAIDCapOperation_Get
kNkMAIDCapOperation_GetDefault

Data pointer to NkMAIDPicCtrlData structure

```
typedef struct tagNkMAIDPicCtrlData
{
    ULONG   ulPicCtrlItem;------ The target Picture Control
    ULONG   ulSize;-----------------The size of Picture Control data (Max: 609 bytes)
    bool   bModifiedFlag; ----------Modification flag
                                        (false: initial registration,   true: edit)
    void*   pData;---------------------- The pointer of Picture Control data.
} NkMAIDPicCtrlData, FAR* LPNkMAIDPicCtrlData;
```

The range of value sets to “ulPicCtrlItem” is enumerated by Capability_PictureControl.

When during movie recording, the ulOperations of this capability cannot be set into.

[In case of Set]

When the client sends kNkMAIDCapOperation_Set, the client must set the all the member of NkMAIDPicCtrlData.

If “bModifiedFlag” is false (initial registration), the module updates the current value and default value of Picture Control, by the content of “pData”. If “bModifiedFlag” is true (edit), the module updates the current value of Picture Control only, by the content of “pData”.

The limitations at Set are as follows.

- If “ulPicCtrlItem” is Standard(1), Neutral(2), Vivid(3), Monochrome(4), Portrait(5), Landscape(6), bModifiedFlag must be set to true(edit).
- If “ulPicCtrlItem” is Custom Picture Control(201 - 209), the “CustomFlag” of Picture Control data must be set to custom (1).
- “RegistrationName” will not be used when “ulPicCtrlItem” is Standard(1), Neutral(2), Vivid(3), Monochrome(4), Portrait(5), Landscape(6).
- If “ulPicCtrlItem” is Neutral(2), Custom Picture Control(201 - 209), the “QuickAdjustFlag” of Picture Control data must be set to invalid (0).
- If “ulPicCtrlItem” is Monochrome(4), “MonochromeFlag” of Picture Control data must be set to monochrome (1). If “ulPicCtrlItem” is not Monochrome(4), “MonochromeFlag” of Picture Control data must be set to color(0).
- When “MonochromeFlag” is changed, bModifiedFlag must be set to false(initial registration).
- If the “QuickAdjustFlag” of Picture Control data is valid (1), the camera determines each setting by referring ”QuickAdjust” of Picture Control data, and does not refer the other settings. If “QuickAdjustFlag” of Picture Control data is invalid (0), the camera determines

each setting by referring the other settings, and does not refer ”QuickAdjust” of Picture Control data.

- If “CustomCurveFlag” of picture control data is used (1), the client have to set Custom Picture Control(201 - 209) to “ulPicCtrlItem”.

[In case of Get]

When the client sends kNkMAIDCapOperation_Get, the client must set the maximum Picture Control data size, 609, to "ulSize", and set the allocation space for 609 bytes to ”pData”.
The module sets the size of the picture control data actually set to “pData” to “ulSize” when succeeding in acquisition.
It is possible to get Picture Control data about unused Picture Control data.
The client can know whether the Picture Control data is used or not by referring “CustomFlag”.

The format of the Picture Control data is shown below.

[Color]

Field	Size (Byte)	Data
PicCtrlItem	1	type of Picture Control 1: Standard 2: Neutral 3: Vivid 4: Monochrome 5: Portrait 6: Landscape 101 – 199 : Option Picture Control In case of Custom Picture Control, set the base Picture Control.
MonochromeFlag	1	Monochrome Flag 0: color 1: monochrome
CustomFlag	1	Custom Flag 0 : Standard 1 : Custom 2 : Unused custom
RegistrationName	20	Registration name of Picture Control The string data is 20 byte fixation, and null terminated. (19 characters in actual.)
QuickAdjustFlag	1	Quick Adjust Flag 0: invalid 1: valid In case of ulPicCtrlItem of NkMAIDPicCtrlData is Neutral or Custom Picture Control, it is 0 fixation.

QuickAdjust	1	Quick Adjust value -2 to +2
Saturation	1	Saturation -3 to +3 -128 is Auto
Hue	1	Hue -3 to +3
Sharpening	1	Sharpening 0 to 9 -128 is Auto
Contrast	1	Contrast -3 to +3 -128 is Auto If CustomCurveData is used, this setting is not referred, and if kNkMAIDCapability_Active_D_Lighting is not set to [3. off], this setting is not used.
Brightness	1	Brightness -1 to +1 If CustomCurveData is used, this setting is not referred, and if kNkMAIDCapability_Active_D_Lighting is not set to [3. off], this setting is not used.
CustomCurveFlag	1	Custom Curve Flag 0: No Custom Curve 1: Custom Curve used
CustomCurveData	578	Custom Curve Data This data is not added when there is no Custom Curb. [Header] 64 byte + [LUT] 257 * 2 byte = 578 byte Refer to "LUT format" for details. If kNkMAIDCapability_Active_D_Lighting is not [3. off], this setting is not used.

[Monochrome]

Field	Size (Byte)	Data
PicCtrlItem	1	type of Picture Control 1: Standard 2: Neutral 3: Vivid 4: Monochrome 5: Portrait 6: Landscape 101 – 199 : Option Picture Control In case of Custom Picture Control, set the base Picture Control.

MonochromeFlag	1	Monochrome Flag 0: color 1: monochrome
CustomFlag	1	Custom Flag 0 : Standard 1 : Custom 2 : Unused custom
RegistrationName	20	Registration name of Picture Control The string data is 20 byte fixation, and null terminated. (19 characters in actual.)
FilterEffects	1	Filter Effect 0: None 1: Yellow 2: Orange 3: Red 4: Green
Toning	1	Toning(ToneColor) 0:B&W 1:Sepia 2:Cyanotype 3:Red 4:Yellow 5:Green 6:Blue Green 7:Blue 8:Purple Blue 9:Red Purple
ToningDensity	1	Toning(Level) 1 to 7
Reserve	1	vacant
Sharpening	1	Sharpening 0 to 9 -128 is Auto
Contrast	1	Contrast -3 to +3 -128 is Auto If CustomCurveData is used, this setting is not referred, and if kNkMAIDCapability_Active_D_Lighting is not set to [3. off], this setting is not used.
Brightness	1	Brightness -1 to +1 If CustomCurveData is used, this setting is not referred, and if kNkMAIDCapability_Active_D_Lighting is not set to [3. off],

		this setting is not used.
CustomCurveFlag	1	Custom Curve Flag 0：No Custom Curve 1：Custom Curve used
CustomCurveData	578	Custom Curve Data This data is not added when there is no Custom Curb. [Header] 64 byte + [LUT] 257 * 2 byte = 578 byte Refer to "LUT format" for details. If kNkMAIDCapability_Active_D_Lighting is not [3. off], this setting is not used.

[LUT format]

LUT data is composed from LUT and LUT header. LUT is 2048 byte 11 bit * 8 bit, LUT header is 64 byte and is used by host. LUT header format is original specification by host, and the camera is not concerned of the content of LUT header. But, the top 2 byte of LUT header is used for camera to judge LUT header exist or not. So, the client has to set LUT header.

Byte	contents
0 - 1	Length (2116)
2, 3	Reserved
4,- 67	Lut Header
68	Data0
69	Data1
…	
2115	Data2047

[LUT header format]

The content of the LUT header set by the application made of Nikon is shown below as the example.

Byte	contents	Range
1	AriaID (Byte1)	0x49
2	AriaID (Byte2)	0x30
3	Input Minimum (Black Point)	0-255
4	Input Maximum	0-255
5	Output Minimum	0-255
6	Output Maximum	0-255
7	Gamma (integer portion)	0-20
8	Gamma (fractional portion)	0-100
9	Number of Spline Points	2-20
10、11	Splime Point1 (x、y)	0-255、0-255
12、13	Splime Point2 (x、y)	0-255、0-255
・・・		
48、49	Splime Point20 (x、y)	0-255、0-255
50 ～ 64	Reserved	0

3.46. GetPicCtrlInfo

This will get the Picture Control information.(Shooting menu)

Capability kNkMAIDCapability_GetPicCtrlInfo

Object types Source

ulType kNkMAIDCapType_Generic

ulOperations kNkMAIDCapOperation_Get

Data pointer to NkMAIDGetPicCtrlInfo structure

```
typedef struct tagNkMAIDGetPicCtrlInfo
{
    ULONG   ulPicCtrlItem;------The target Picture Control
    ULONG   ulSize;-----The size of Picture Control information (48bytes fixation)
    void*   pData;---------The pointer of Picture Control information.
} NkMAIDGetPicCtrlInfo, FAR* LPNkMAIDGetPicCtrlInfo;
```

The client must set the all the member of NkMAIDGetPicCtrlInfo.

The value range of Picture Control set to “ulPicCtrlItem” is enumerated by Capability_Pictur eControl.

The Picture Control information is valid when “ulPicCtrlItem” is color. If “ulPicCtrlItem” is monochrome or there is no picture control of base, the Picture Control information will be all 0.

The format of the Picture Control information is shown below.

[Picture Control information]

Offset	Size	Field	Data	Description	
0x00	1	ValidFlag	0 : invalid 1 : valid	It shows whether the data valid or invalid. When there is no base Picture Control or when it is monochrome, this value is 0.	
0x01	1	QuickCapa	0x80 : selectable 0x01 : AUTO usable 0x81 : selectable & AUTO usable	Quick Adjust setting.	
0x02	1	SharpeningCapa	0x80 : selectable 0x01 : AUTO usable 0x81 : selectable & AUTO usable	Sharpening setting	
0x03	1	ContrastCapa	0x80 : selectable 0x01 : AUTO usable 0x81 : selectable & AUTO usable	Contrast setting	
0x04	1	BrightnessCapa	0x80 : selectable 0x01 : AUTO usable 0x81 : selectable & AUTO usable	Brightness setting	
0x05	1	SaturationCapa	0x80 : selectable 0x01 : AUTO usable 0x81 : selectable & AUTO usable	Saturation setting	
0x06	1	HueCapa	0x80 : selectable 0x01 : AUTO usable 0x81 : selectable & AUTO usable	Hue setting	
0x07	1	Reserved	0	Reserved	
0x08	1	DefaultQuickLevel	-2 to +2	Quick Adjust default value	
0x09	1	ContrastGridPos[0]	0 to 14	Contrast	Y coordinates in grid at value –3.
0x0A	1	ContrastGridPos[1]	0 to 14		Y coordinates in grid at value –2.
0x0B	1	ContrastGridPos[2]	0 to 14		Y coordinates in grid at value –1.
0x0C	1	ContrastGridPos[3]	0 to 14		Y coordinates in grid at value 0.
0x0D	1	ContrastGridPos[4]	0 to 14		Y coordinates in grid at value +1.
0x0E	1	ContrastGridPos[5]	0 to 14		Y coordinates in grid at value +2.
0x0F	1	ContrastGridPos[6]	0 to 14		Y coordinates in grid at value +3.
0x10	1	SaturationGridPos[0]	0 to 14	Saturation	X coordinates in grid at value –3.
0x11	1	SaturationGridPos[1]	0 to 14		X coordinates in grid at value –2.
0x12	1	SaturationGridPos[2]	0 to 14		X coordinates in grid at value –1.
0x13	1	SaturationGridPos[3]	0 to 14		X coordinates in grid at value 0.
0x14	1	SaturationGridPos[4]	0 to 14		X coordinates in grid at value +1.
0x15	1	SaturationGridPos[5]	0 to 14		X coordinates in grid at value +2.
0x16	1	SaturationGridPos[6]	0 to 14		X coordinates in grid at value +3.

0x17	1	DefaultLevel[0]	0 to 9	Quick Adjust	Sharpening
0x18	1		-3 to +3		Contrast
0x19	1		-1 to +1		Brightness
0x1A	1		-3 to +3		Saturation
0x1B	1		-3 to +3	-2	Hue
0x1C	1	DefaultLevel[1]	0 to 9	Quick Adjust	Sharpening
0x1D	1		-3 to +3		Contrast
0x1E	1		-1 to +1		Brightness
0x1F	1		-3 to +3		Saturation
0x20	1		-3 to +3	-1	Hue
0x21	1	DefaultLevel[2]	0 to 9	Quick Adjust	Sharpening
0x22	1		-3 to +3		Contrast
0x23	1		-1 to +1		Brightness
0x24	1		-3 to +3		Saturation
0x25	1		-3 to +3	0	Hue
0x26	1	DefaultLevel[3]	0 to 9	Quick Adjust	Sharpening
0x27	1		-3 to +3		Contrast
0x28	1		-1 to +1		Brightness
0x29	1		-3 to +3		Saturation
0x2A	1		-3 to +3	1	Hue
0x2B	1	DefaultLevel[4]	0 to 9	Quick Adjust	Sharpening
0x2C	1		-3 to +3		Contrast
0x2D	1		-1 to +1		Brightness
0x2E	1		-3 to +3		Saturation
0x2F	1		-3 to +3	2	Hue

3.47. DeleteCustomPictureControl

This will delete Custom Picture Control. (Shooting menu)

Capability kNkMAIDCapability_DeleteCustomPictureControl

Object types Source

ulType kNkMAIDCapType_Unsigned

ulOperations kNkMAIDCapOperation_Set

Data Custom Picture Control Item

When the client set the one of Custom Picture Control enumerated by Capability_PictureControl and executes kNkMAIDCapOperation_Set, the specified Custom Picture Control will be deleted.

When during movie recording, the ulOperations of this capability cannot be set into.

When it tried to remove the "Custom Picture Control that is selected in the User Modes", which returns a kNkMAIDResult_ValueOutOfBounds.

3.48. Active_D_Lighting

This will set Active D-Lighting. (Shooting menu)

Capability kNkMAIDCapability_Active_D_Lighting

Object types Source

ulType kNkMAIDCapType_Unsigned

ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set, kNkMAIDCapOperation_GetDefault

Data one of eNkMAIDActive_D_Lighting

0: High
1: Normal
2: Low
3: Off
5: Extra high
6: Auto

If any of the following, the ulOperations cannot be set into.

- The Capability_ExposureMode is Scene Modes or Special Effects Modes.
- During movie recording.
- The Capability_SpotWBMode is 1 (ON).

3.49. ISOAutoShutterTime

This will set the shutter speed when ISO is controlled automatically. (Shooting menu)

Capability kNkMAIDCapability_ISOAutoShutterTime

Object types Source

ulType kNkMAIDCapType_Unsigned

ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetDefault, kNkMAIDCapOperation_Set

Data one of eNkMAIDISOAutoShutterTime

Threshold	eNkMAIDISOAutoShutterTime
1/4000	20
1/3200	21
1/2500	22
1/2000	23
1/1600	24
1/1250	25
1/1000	26
1/800	27
1/640	28
1/500	29
1/400	30
1/320	31
1/250	13
1/200	14
1/160	15
1/125	0
1/100	16
1/80	17
1/60	1
1/50	19
1/40	18
1/30	2
1/15	3
1/8	4
1/4	5
1/2	6
1	7
Auto	32

When the following conditions, ISO sensitivity is automatically controlled.

・Shutter speed set in this capability, underexposed,
and Capability_IsoControl is True,
and Capability_ExposureMode is Program mode, Aperture priority.

If any of the following, the ulOperations cannot be set into.

- The Capability_IsoControl is False.
- The Capability_ExposureMode is Scene Modes or Special Effects Modes.
- During movie recording.
- The Capability_SpotWBMode is 1 (ON).

3.50. ISOAutoShutterTimeAutoValue

This will set the adjustment value when kNkMAIDCapability_ISOAutoShutterTime set to "Auto". (Shooting menu)

Capability	kNkMAIDCapability_ISOAutoShutterTimeAutoValue
Object types	Source
ulType	kNkMAIDCapType_Range
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set
Data	-2～+2EV（Default value: 0）

If any of the following, the ulOperations cannot be set into.

- The Capability_IsoControl is False.
- The Capability_ISOAutoShutterTime is not "Auto".
- During movie recording.
- The Capability_SpotWBMode is 1 (ON).

3.51. ISOAutoHiLimit

This will set the max sensitivity when ISO is controlled automatically. (Shooting menu)

Capability kNkMAIDCapability_ISOAutoHiLimit

Object types Source

ulType kNkMAIDCapType_Unsigned

ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetDefault, kNkMAIDCapOperation_Set

Data one of eNkMAIDISOAutoHiLimit3

Capability_ISOAutoHiLimit		Capability_SensitivityInterval	
eNkMAIDISOAutoHiLimit3	ISO	1/3Step	1/2Step
0	200	○	○
1	250	○	×
2	280	×	○
3	320	○	×
4	400	○	○
5	500	○	×
6	560	×	○
7	640	○	×
8	800	○	○
9	1000	○	×
10	1100	×	○
11	1250	○	×
12	1600	○	○
13	2000	○	×
14	2200	×	○
15	2500	○	×
16	3200	○	○
17	4000	○	×
18	4500	×	○
19	5000	○	×
20(Default)	6400	○	○
21	Hi 0.3	○	×
22	Hi 0.5	×	○
23	Hi 0.7	○	×
24	Hi 1	○	○
25	Hi 2	○	○

If any of the following, the ulOperations cannot be set into.

- The Capability_ExposureMode is Scene Modes or Special Effects Modes.
- The kNkMAIDCapability_IsoControl is False.
- During movie recording.
- The Capability_SpotWBMode is 1 (ON).

3.52. MovieScreenSize

This will set the shooting menu, [Movie setting – Image quality]. (Shooting menu)

Capability kNkMAIDCapability_MovieScreenSize

Object types Source

ulType kNkMAIDCapType_Unsigned

ulOperations kNkMAIDCapOperation_Get,
kNkMAIDCapOperation_GetDefault,
kNkMAIDCapOperation_Set

Data one of eNkMAIDMovieScreenSize4

eNkMAIDMovieScreenSize4	Size
0	1920×1080 60i
1	1920×1080 50i
2	1920×1080 30p
3	1920×1080 25p
4	1920×1080 24p
5	1280× 720 60p
6	1280× 720 50p

When the Capability_CCDDataMode set to "4: DXformat",capability of this value will change as follows.

- "0: 1920×1080 60i" ⇒ "2: 1920×1080 30i"
- "1: 1920×1080 50i" ⇒ "3: 1920×1080 25i"

When the Capability_CCDDataMode is "4:DXformat",Can not be set to "0:1920×1080 60i" and "1:1920×1080 50i".

If any of the following, the ulOperations cannot be set into.

- During movie recording.
- The Capability_SpotWBMode is 1 (ON).

3.53. MovieImageQuality

This will set the shooting menu, [Movie setting – Movie quality]. (Shooting menu)

Capability	kNkMAIDCapability_MovieImageQuality
Object types	Source
ulType	kNkMAIDCapType_Unsigned
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetDefault, kNkMAIDCapOperation_Set
Data	one of eNkMAIDMovieImageQuality 0: Normal 1: High quality

If any of the following, the ulOperations cannot be set into.

- During movie recording.
- The Capability_SpotWBMode is 1 (ON).

3.54. MovieRecMicrophone

This will set the shooting menu, [Movie setting – Recording setting]. (Shooting menu)

Capability	kNkMAIDCapability_MovieRecMicrophone
Object types	Source
ulType	kNkMAIDCapType_Unsigned
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetDefault, kNkMAIDCapOperation_Set
Data	one of eNkMAIDMovRecMicrophone 0: Microphone sensitivity Auto (A) 4: Not recorded 5: Manual

If any of the following, the ulOperations cannot be set into.

- During movie recording.
- The Capability_SpotWBMode is 1 (ON).

3.55. MovieRecMicrophoneValue

This will set the Microphone sensitivity when the Capability_MovieRecMicrophone set to “Manual”. (Shooting menu)

Capability	kNkMAIDCapability_MovieRecMicrophoneValue
Object types	Source
ulType	kNkMAIDCapType_Range
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set
Data	1 to 20 step=1 (Default: 15)

If any of the following, the ulOperations cannot be set into.

- The Capability_MovieRecMicrophone is not “5: Manual”.
- During movie recording.
- The Capability_SpotWBMode is 1 (ON).

3.56. MovieRecDestination

This will set the shooting menu, [Movie setting – Destination of Movie settings]. (Shooting menu)

Capability	kNkMAIDCapability_MovieRecDestination
Object types	Source
ulType	kNkMAIDCapType_Unsigned
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetDefault, kNkMAIDCapOperation_Set
Data	one of eNkMAIDMovRecDestination 0: Slot 1 1: Slot 2

If the card is not inserted in the slot, but this capability has been set, recorded to the card that is inserted into the slot of the other.

If any of the following, the ulOperations cannot be set into.

- During movie recording.
- The Capability_SpotWBMode is 1 (ON).

3.57. AutoDistortion

This will set the shooting menu, [Auto distortion control]. (Shooting menu)

Capability	kNkMAIDCapability_AutoDistortion
Object types	Source
ulType	kNkMAIDCapType_Unsigned
ulOperations	kNkMAIDCapOperation_Get,, kNkMAIDCapOperation_GetDefault, kNkMAIDCapOperation_Set
Data	one of eNkMAIDAutoDistortion 0: Off 1: On

If any of the following, the ulOperations cannot be set into.

- The CPU lens does not attached.
- The lens unsupported auto distortion control is attached.
- During movie recording.
- The Capability_SpotWBMode is 1 (ON).

3.58. SceneMode

This will set the shooting menu, [Scene mode]. (Shooting menu)

Capability	kNkMAIDCapability_SceneMode
Object types	Source
ulType	kNkMAIDCapType_Unsigned
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetDefault, kNkMAIDCapOperation_Set
Data	one of eNkMAIDSceneMode 0: Night Landscape 1: Party/Indoor 2: Beach/Snow 3: Sunset 4: Dusk/Dawn 5: Pet Portrait 6: Candlelight 7: Blossom 8: Autumn Colors 9: Food 13: Portrait 14: Landscape 15: Child 16: Sports 17: Close up 18: Night portrait

The value of this capability selects Scene Modes, when the mode dial is rotated to "SCENE".

This capability supports set command only when the value of Capability_ExposureMode is set to [14: SCENE]. When the value of Capability_ExposureMode is set to the value other than [14: SCENE], the operations of this capability cannot be set into.

When the Capability_LiveViewStatus is 1 (ON), the ulOperations of this capability cannot be set into.

3.59. EffectMode

This will get the shooting menu, [Special Effects]. (Shooting menu)

Capability	kNkMAIDCapability_EffectMode
Object types	Source
ulType	kNkMAIDCapType_Unsigned
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetDefault, kNkMAIDCapOperation_Set
Data	one of eNkMAIDSceneMode 0: Night Vision 1: Color Sketch 2: Miniature Effect 3: Selective Color 4: Silhouette 5: High Key 6: Low Key

Capability_ExposureMode is set to [17: EFFECTS]. When the value of Capability_ExposureMode is set to the value other than [17: EFFECTS], the operations of this capability cannot be set into.

When the Capability_LiveViewStatus is 1 (ON), the ulOperations of this capability cannot be set into.

3.60. UserMode1

This will get the shooting menu, [U1 (User mode1)]. (Shooting menu)

Capability	kNkMAIDCapability_UserMode1
Object types	Source
ulType	kNkMAIDCapType_Unsigned
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetDefault,
Data	one of eNkMAIDUserMode 0: Night Landscape 1: Party/Indoor 2: Beach/Snow 3: Sunset 4: Dusk/Dawn 5: Pet Portrait 6: Candlelight 7: Blossom 8: Autumn Colors 9: Food 10: Silhouette 11: High Key 12: Low Key 13: Portrait 14: Landscape 15: Child 16: Sports 17: Close up 18: Night portrait 19: Program mode 20: Speed priority 21: Aperture priority 22: Manual 23: Auto 24: Flash Off 25: Night Vision 26: Color Sketch

27: Miniature Effect

28: Selective Color

This capability supports get command only when the value of Capability_ExposureMode is set to 15: U1(User Mode1).

When the value of Capability_ExposureMode is set to the value other than 15: U1(User Mode1), the value is not secured.

Registration and reset of U1 can be done only from the main body of the camera.

3.61. UserMode2

This will get the shooting menu, [U2 (User mode2)]. (Shooting menu)

Capability	kNkMAIDCapability_UserMode2
Object types	Source
ulType	kNkMAIDCapType_Unsigned
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetDefault,
Data	one of eNkMAIDUserMode 0: Night Landscape 1: Party/Indoor 2: Beach/Snow 3: Sunset 4: Dusk/Dawn 5: Pet Portrait 6: Candlelight 7: Blossom 8: Autumn Colors 9: Food 10: Silhouette 11: High Key 12: Low Key 13: Portrait 14: Landscape 15: Child 16: Sports 17: Close up 18: Night portrait 19: Program mode 20: Speed priority 21: Aperture priority 22: Manual 23: Auto 24: Flash Off 25: Night Vision 26: Color Sketch

27: Miniature Effect
28: Selective Color

This capability supports get command only when the value of Capability_ExposureMode is set to 16: U2 (User Mode2).
When the value of Capability_ExposureMode is set to the value other than 16: U2 (User Mode2), the value is not secured.
Registration and reset of U2 can be done only from the main body of the camera.

3.62. HDRMode

This will set the shooting menu, [HDR (High Dynamic Range) - HDR]. (Shooting menu)

Capability	kNkMAIDCapability_HDRMode
Object types	Source
ulType	kNkMAIDCapType_Unsigned
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetDefault, kNkMAIDCapOperation_Set
Data	one of eNkMAIDHDRMode 0: Off 1: On(single photo) 2: On(series)

When Capability_ShootingMode is Cl or Ch and shooting continuously, the HDR photo will be only the first photo.

If any of the following, the ulOperations cannot be set into.

- The Capability_ExposureMode is Scene Modes or Special Effects Modes.
- kNkMAIDCapability_CompressionLevel is "RAW" or "RAW+JPEG(Basic/Normal/Fine)".
- kNkMAIDCapability_EnableBracketing is "True:ON".
- During movie recording.
- The Capability_SpotWBMode is 1 (ON).

3.63. HDRSmoothing

This will set the shooting menu, [HDR(high dynamic range) – Smoothing].
(Shooting menu)

Capability	kNkMAIDCapability_HDRSmoothing
Object types	Source
ulType	kNkMAIDCapType_Unsigned
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetDefault, kNkMAIDCapOperation_Set
Data	one of eNkMAIDHDRSmoothing 0: High 1: Normal 2: Low 3: Auto 4: Extra High

If any of the following, the ulOperations cannot be set into.

- The Capability_ExposureMode is Scene Modes or Special Effects Modes.
- kNkMAIDCapability_CompressionLevel is “RAW” or “RAW+JPEG(Basic/Normal/Fine)”.
- kNkMAIDCapability_EnableBracketing is “True:ON”.
- During movie recording.
- The Capability_SpotWBMode is 1 (ON).

3.64. RemoteControlMode

This will set the shooting menu, [Remoto control mode]. (Shooting menu)

Capability	kNkMAIDCapability_RemoteControlMode
Object types	Source
ulType	kNkMAIDCapType_Enum kNkMAIDArrayType_Unsigned
ulOperations	kNkMAIDCapOperation_Get,kNkMAIDCapOperation_GetArray, kNkMAIDCapOperation_Set
Data	one of eNkMAIDRemoteControlMode 0: Dleyed remote 1: Quick-response remote 2: Remote mirror-up 3: Off

If any of the following, the ulOperations cannot be set into.

- The Capability_LiveViewSelector is "1: Movie live view" and the Capability_MovieReleaseButton is "1: Record movies".
- During movie recording.
- The Capability_SpotWBMode is 1 (ON).

3.65. ResetCustomSetting

This will reset the custom settings. (CSM menu R)

Capability	kNkMAIDCapability_ResetCustomSetting
Object types	Source
ulType	kNkMAIDCapType_Process
ulOperations	kNkMAIDCapOperation_Start
Data	None

If any of the following, the ulOperations cannot be set into.

- During movie recording.
- The Capability_SpotWBMode is 1 (ON).

3.66. AFcPriority

This will get the cusom settings menu, [Autofocus – AF-C priority selection]. (CSM menu a1)

Capability kNkMAIDCapability_AFcPriority

Object types Source

ulType kNkMAIDCapType_Enum
kNkMAIDArrayType_PackedString

ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray, kNkMAIDCapOperation_Set

Data

Focus	"AF-C Focus"
Release	"AF-C Shutter"

When the Capability_LiveViewStatus is 1(ON), the ulOperations cannot be set into.

3.67. AFsPriority

This will set the single AF area priority. (CSM menu a2)

Capability kNkMAIDCapability_AFsPriority

Object types Source

ulType kNkMAIDCapType_Enum
kNkMAIDArrayType_PackedString

ulOperations kNkMAIDCapOperation_Get,
kNkMAIDCapOperation_GetArray,
kNkMAIDCapOperation_Set

Data

Focus	"AF-S Focus"
Release	"AF-S Shutter"

When the Capability_LiveViewStatus is 1(On), the ulOperations cannot be set into.

3.68. AFLockOnEx

This will set whether AF lock or not. (CSM menu a3)

Capability kNkMAIDCapability_AFLockOnEx

Object types Source

ulType kNkMAIDCapType_Unsigned

ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set, kNkMAIDCapOperation_GetDefault

Data one of eNkMAIDAFLockOnEx

0: (Long)
1: (Normal)
2: (Short)
3: OFF
4: (Long lightly)
5: (Short lightly)

When the Capability_LiveViewStatus is 1(On), the ulOperations cannot be set into.

3.69. FocusAreaLED

This will set how focus points are illuminated in the viewfinder. (CSM menu a4)

Capability kNkMAIDCapability_FocusAreaLed

Object types Source

ulType kNkMAIDCapType_Enum
kNkMAIDArrayType_PackedString

ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray, kNkMAIDCapOperation_Set

Data Auto, Off, On

When the Capability_LiveViewStatus is 1(On), the ulOperations cannot be set into.

3.70. AFAreaSelector

This will set that AF area selector motion is circular or not. (CSM menu a5)

Capability kNkMAIDCapability_AFAreaSelector

Object types Source

ulType kNkMAIDCapType_Enum
kNkMAIDArrayType_PackedString

ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_ GetArray,
kNkMAIDCapOperation_Set

Data

No wrap	"Normal"
Wrap	"Cyclic"

When the Capability_LiveViewStatus is 1(On), the ulOperations cannot be set into.

3.71. AFAreaPoint

This will set AF point selection. (CSM menu a6)

Capability kNkMAIDCapability_AFAreaPoint

Object types Source

ulType kNkMAIDCapType_Unsigned

ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set,
kNkMAIDCapOperation_GetDefault

Data one of eNkMAIDAFAreaPoint
0: 51 points
1: 11 points

When the Capability_LiveViewStatus is 1(On), the ulOperations cannot be set into.

3.72. AFSubLight

This will set whether the built-in AF-assist illuminator lights or not. (CSM menu a7)

Capability	kNkMAIDCapability_AFSubLight
Object types	Source
ulType	kNkMAIDCapType_Boolean
ulOperations	kNkMAIDCapOperation_Get,kNkMAIDCapOperation_Set, kNkMAIDCapOperation_GetDefault
Data	True: On False: Off

If any of the following, the ulOperations cannot be set into.

- The Capability_ExposureMode is Scene Mode (Landscape,Sports ,Night ,Landscape, Beach/Snow, Sunset, Dusk/Dawn, Pet Portrait).
- The Capability_LiveViewStatus is 1(On)

3.73. AFModeAtLiveView

This will set the focus mode of the live view. (CSM menu a8)

Capability	kNkMAIDCapability_AFModeAtLiveView
Object types	Source
ulType	kNkMAIDCapType_Enum kNkMAIDArrayType_Unsigned
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray, kNkMAIDCapOperation_Set
Data	one of eNkMAIDAFModeAtLiveView 0: AF-S 2: AF-F 3: MF fixed (effective only as the Get value) 4: MF selected

When the Capability_LockCamera is False, not enumerated MF selected (4).

When Capability_ExposureMode is “Miniature”, “Color sketch” of Special Effects Modes, AF-F does not enumerate.

If any of the following, the ulOperations cannot be set into.

- This capability is MF fixed(3).
- During Live view and kNkMAIDCapability_FocusMode is “0: MF”.

3.74. LiveViewAF

This will set the focus point in live view mode. (CSM menu a8)

Capability kNkMAIDCapability_LiveViewAF

Object types Source

ulType kNkMAIDCapType_Unsigned

ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetDefault, kNkMAIDCapOperation_Set

Data one of eNkMAIDLiveViewAF

0: Face priority

1: Wide area

2: Normal area

3: Subject tracking

In the following table, the default value is changed by Scene Modes.

When the setting of Capability_ExposureMode is changed to Scene Modes, the value of this capability will be changed to each default value.

Capability_ExposureMode Capability_SceneMode	Default
Auto Flash Off Portrait (SCENE) Landscape (SCENE) Party/Indoor (SCENE) Beach/Snow (SCENE) Sunset (SCENE) Dusk/Dawn (SCENE) Candle light (SCENE) Blossom (SCENE) Autumn Colors (SCENE) Night Portrait (SCENE) Chinld (SCENE)	0: Face priority
Close up(SCENE) Food (SCENE)	2: Normal area
Sports(SCENE) Night Landscape(SCENE) Pet Portrait(SCENE) Silhouette(EFFECTS) High Key(EFFECTS) Low Key(EFFECTS) Color Sketch(EFFECTS) Selective Color(EFFECTS) Night Vision(EFFECTS) Miniature Effect(EFFECTS)	1: Wide area

It is possible to change the value of this capability during Live View.

When [3 : Subject tracking] is set while executing a live view, kNkMAIDResult_ValueOutOfBounds is returned.

And, when a live view is begun when [3 : Subject tracking] is set, the value of this capability is automatically changed to [1 : Wide area].

If any of the following, the ulOperations cannot be set into.

- The Capability_ExposureMode is “Miniature” of Special Effects Modes.
- The Capability_SpotWBMode is 1 (ON).

3.75. SensitivityInterval

This will set ISO step value. (CSM menu b1)

Capability kNkMAIDCapability_SensitivityInterval

Object types Source

ulType kNkMAIDCapType_Enum
kNkMAIDArrayType_PackedString

ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray, kNkMAIDCapOperation_Set

Data

1/3step	“1/3 Step”
1/2step	“1/2 Step”

If any of the following, the ulOperations cannot be set into.

- During movie recording.
- The Capability_SpotWBMode is 1 (ON).

3.76. EVInterval

This will set the EV interval of the Capability_ShutterSpeed, Capability_Aperture, Capability_FlexibleProgram, and Capability_AEBracketingStep. (CSM menu b2)

Capability kNkMAIDCapability_EVInterval

Object types Source

ulType kNkMAIDCapType_Enum
kNkMAIDArrayType_PackedString

ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray, kNkMAIDCapOperation_Set

Data

1/3 step	“1/3 Step”
1/2 step	“1/2 Step”

When this capability is changed, the Capability_AEBracketingStep will be set to 1/ EV (3), the Capability_BracketingVary is set to “AE Only”, “Flash Only”, “AE & Flash” and Capability_EnableBracketing is set to OFF (False).

If any of the following, the ulOperations cannot be set into.

- During movie recording.
- The Capability_SpotWBMode is 1 (ON).

3.77. CWMeteringDiameter

This will select the center weighted metering diameter. (CSM menu b4)

Capability kNkMAIDCapability_CWMeteringDiameter

Object types Source

ulType kNkMAIDCapType_Enum
kNkMAIDArrayType_PackedString

ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray,
kNkMAIDCapOperation_Set

Data

φ6mm	“6 mm”
φ8mm	“8 mm”
φ10mm	“10 mm”
φ13mm	“13 mm”
Average	“Average”

If any of the following, the ulOperations cannot be set into.

- The Capability_ExposureMode is Scene Modes or Special Effects Modes.
- During movie recording.
- The Capability_SpotWBMode is 1 (ON).

3.78. ExpBaseMatrix

This will set the exposure base when the metering mode is matrix. (CSM menu b5)

Capability kNkMAIDCapability_ExpBaseMatrix

Object types Source

ulType kNkMAIDCapType_Range

ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set

Data -1 - +1EV (1/6EV step) (Default : 0)

If any of the following, the ulOperations cannot be set into.

- During movie recording.
- The Capability_SpotWBMode is 1 (ON).

3.79. ExpBaseCenter

This will set the exposure base when the metering mode is center weighted. (CSM menu b5)

Capability	kNkMAIDCapability_ExpBaseCenter
Object types	Source
ulType	kNkMAIDCapType_Range
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set
Data	-1 - +1EV (1/6EV step) (Default: 0)

If any of the following, the ulOperations cannot be set into.

- During movie recording.
- The Capability_SpotWBMode is 1 (ON).

3.80. ExpBaseSpot

This will set the exposure base when the metering mode is spot. (CSM menu b5)

Capability	kNkMAIDCapability_ExpBaseSpot
Object types	Source
ulType	kNkMAIDCapType_Range
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set
Data	-1 - +1EV (1/6EV step) (Default: 0)

If any of the following, the ulOperations cannot be set into.

- During movie recording.
- The Capability_SpotWBMode is 1 (ON).

3.81. ShootingSpeed

This will set frame rate for continuous low-speed(CL). (CSM menu d5)

Capability kNkMAIDCapability_ShootingSpeed

Object types Source

ulType kNkMAIDCapType_Enum
kNkMAIDArrayType_PackedString

ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray, kNkMAIDCapOperation_Set

Data

6 fps	"6 frames / second"
5 fps	"5 frames / second"
4 fps	"4 frames / second"
3 fps	"3 frames / second"
2 fps	"2 frames / second"
1 fps	"1 frames / second"

If any of the following, the ulOperations cannot be set into.

- During movie recording.
- The Capability_SpotWBMode is 1 (ON).

3.82. ShootingLimit

This will set shooting limit number in continuous shooting. (CSM menu d6)

Capability kNkMAIDCapability_ShootingLimit

Object types Source

ulType kNkMAIDCapType_Range

ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set

Data 1 - 100 (Default:100)

The actual number of shot that can be taken in a continuous shooting mode is limited by the following capability,

- Capability_RemainContinuousShooting
- Capability_ContinuousShootingNum
- Capability_BracketingType

Please look at the paragraph of Capability_ContinuousShootingNum for details.

If any of the following, the ulOperations cannot be set into.

- During movie recording.
- The Capability_SpotWBMode is 1 (ON).

3.83. NumberingMode

This will select a Numbering Mode. (CSM menu d7)

Capability kNkMAIDCapability_NumberingMode

Object types Source

ulType kNkMAIDCapType_Enum
kNkMAIDArrayType_PackedString

ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray,
kNkMAIDCapOperation_Set

Data

OFF	"Normal filename assignment"
ON	"Sequential filename assignment "

If any of the following, the ulOperations cannot be set into.

- During movie recording.
- The Capability_SpotWBMode is 1 (ON).

3.84. ResetFileNumber

This resets the number of the file, which will be stored in a card. (CSM menu d7)

Capability kNkMAIDCapability_ResetFileNumber

Object types Source

ulType kNkMAIDCapType_Process

ulOperations kNkMAIDCapOperation_Start

Data None

If any of the following, the ulOperations cannot be set into.

- During movie recording.
- The Capability_SpotWBMode is 1 (ON).

3.85. ExposureDelayEx

This will set exposure delay mode. (CSM menu d10)

Capability kNkMAIDCapability_ExposureDelayEx

Object types Source

ulType kNkMAIDCapType_Unsigned

ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set, kNkMAIDCapOperation_GetDefault

Data one of eNkMAIDExposureDelayEx

0: 3 sec

1: 2 sec

2: 1 sec

3: Off

If any of the following, the ulOperations cannot be set into.

- During movie recording.
- The Capability_SpotWBMode is 1 (ON).

3.86. FlashSyncTime

This will set flash sync speed on shooting with speedlight. (CSM menu e1)

Capability kNkMAIDCapability_FlashSyncTime

Object types Source

ulType kNkMAIDCapType_Enum
kNkMAIDArrayType_PackedString

ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray, kNkMAIDCapOperation_Set

Data

1/320 sec（AutoFP）	“1/320 sec (FP Auto)”
1/250 sec（AutoFP）	“1/250 sec (FP Auto)”
1/250 sec	“1/250 sec
1/200 sec	“1/200 sec”
1/160 sec	“1/160 sec”
1/125 sec	“1/125 sec”
1/100 sec	“1/100 sec”
1/80 sec	“1/80 sec”
1/60 sec	“1/60 sec”

If any of the following, the ulOperations cannot be set into.

- During movie recording.
- The Capability_SpotWBMode is 1 (ON).

3.87. FlashSlowLimit

This will set the lowest shutter speed on shooting with speedlight. (CSM menu e2)

Capability kNkMAIDCapability_FlashSlowLimit

Object types Source

ulType kNkMAIDCapType_Enum
kNkMAIDArrayType_PackedString

ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray,
kNkMAIDCapOperation_Set

Data

1/60 sec	“1/60 sec”
1/30 sec	“1/30 sec”
1/15 sec	“1/15 sec”
1/8 sec	“1/8 sec”
1/4 sec	“1/4 sec”
1/2 sec	“1/2 sec”
1 sec	“1 sec”
2 sec	“2 sec”
4 sec	“4 sec”
8 sec	“8 sec”
15 sec	“15 sec”
30 sec	“30 sec”

If any of the following, the ulOperations cannot be set into.

- The Capability_ExposureMode is Scene Modes or Special Effects Modes.
- During movie recording.
- The Capability_SpotWBMode is 1 (ON).

3.88. InternalSplMode

This will set the flash mode of CSM. (CSM menu e3)

Capability kNkMAIDCapability_InternalSplMode

Object types Source

ulType kNkMAIDCapType_Enum
kNkMAIDArrayType_PackedString

ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray,
kNkMAIDCapOperation_Set

Data

TTL	“TTL”
Manual	“Manual”
Repeating Flash	“Repeating Flash”
Commander mode	“Command”

When powered external speedlight new communication, (without setting display: SB-400) is attached, the value of this capability is limited to 2 items, "TTL" and "Manual".

If any of the following, the ulOperations cannot be set into.

- The Capability_ExposureMode is Scene Modes or Special Effects Modes.
- During movie recording.
- The Capability_SpotWBMode is 1 (ON).

3.89. BracketingVary

This will select the bracketing variation.(CSM menu e6)

Capability kNkMAIDCapability_BracketingVary

Object types Source

ulType kNkMAIDCapType_Enum
kNkMAIDArrayType_PackedString

ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray,
kNkMAIDCapOperation_Set

Data

AE bracketing	“AE Only”
Flash only	“Flash Only”
AE & flash	“AE & Flash”
WB bracketing	“White Balance”
ADLbracketing	“ADL bracketing”

If any of the following, the ulOperations cannot be set into.

- The Capability_ExposureMode is Scene Modes or Special Effects Modes.
- During movie recording.
- The Capability_SpotWBMode is 1 (ON).

3.90. BracketingOrder

This will select the bracketing order. (CSM menu e7)

Capability kNkMAIDCapability_BracketingOrder

Object types Source

ulType kNkMAIDCapType_Enum
kNkMAIDArrayType_PackedString

ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray,
kNkMAIDCapOperation_Set

Data

[0] -> [-] -> [+]	"Same as Auto Bracketing"
[-] -> [0] -> [+]	"Negative to Positive"

If any of the following, the ulOperations cannot be set into.

- The Capability_ExposureMode is Scene Modes or Special Effects Modes.
- During movie recording.
- The Capability_SpotWBMode is 1 (ON).

3.91. ApertureDial

This will set whether to use sub-command dial to operate aperture.(CSM menu f5)

Capability kNkMAIDCapability_ApertureDial

Object types Source

ulType kNkMAIDCapType_Boolean

ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set
kNkMAIDCapOperation_GetDefault

Data True: use False: Not use

If any of the following, the ulOperations cannot be set into.

- During movie recording.
- The Capability_SpotWBMode is 1 (ON).

3.92. ShootNoCard

This will set disable to shoot when a card is not install. (CSM menu f7)

Capability kNkMAIDCapability_ShootNoCard

Object types Source

ulType kNkMAIDCapType_Boolean

ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set
kNkMAIDCapOperation_GetDefault

Data True: Enable to shoot False: Disable

If any of the following, the ulOperations cannot be set into.

- During movie recording.
- The Capability_SpotWBMode is 1 (ON).

3.93. UserComment

This will set a description of an image. (SETUP)

Capability kNkMAIDCapability_UserComment

Object types Source

ulType kNkMAIDCapType_String

ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set

Data String shorter than 36 bytes (not including termination '¥0')

If the client set string longer than 36 bytes, the module uses 36 bytes from the head. The character, which can be included in the string, is only an ASCII characters in the following table. When the other character is set, the module returns an error (kNkMAIDResult_ValueOutOfBounds).

If any of the following, the ulOperations cannot be set into.

- During movie recording.
- The Capability_SpotWBMode is 1 (ON).

3.94. EnableComment

This will enable to add UserComment to an image file. (SETUP)

Capability kNkMAIDCapability_EnableComment

Object types Source

ulType kNkMAIDCapType_Boolean

ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set, kNkMAIDCapOperation_GetDefault

Data True: Enable False: Disable

If any of the following, the ulOperations cannot be set into.

- During movie recording.
- The Capability_SpotWBMode is 1 (ON).

3.95. CameraInclinationMode

This will set whether add or not rotate information to the image file. (SETUP)

Capability kNkMAIDCapability_CameraInclinationMode
Object types Source
ulType kNkMAIDCapType_Boolean
ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set, kNkMAIDCapOperation_GetDefault
Data True: Add False: not Add

When the value of this capability is set to False, the Capability_CameraInclination is always zero(Level).

If any of the following, the ulOperations cannot be set into.

- During movie recording.
- The Capability_SpotWBMode is 1 (ON).

3.96. ClockDateTime

This will set the built-in clock of camera. (SETUP)

Capability kNkMAIDCapability_ClockDateTime
Object types Source
ulType kNkMAIDCapType_DateTime
ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set
Data kNkMAIDDataType_DateTimePtr

When the Capability_LiveViewStatus is 1 (ON) , the ulOperations cannot be set into.

3.97. ManualSetLensNo

This will set the number of the lens referred to by Capability_FmmManual and Capability_F0Manual. (SETUP)

Capability kNkMAIDCapability_ManualSetLensNo
Object types Source
ulType kNkMAIDCapType_Unsigned
ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set, kNkMAIDCapOperation_GetDefault
Data 0 - 8 (Default : 0)

If any of the following, the ulOperations cannot be set into.

- During movie recording.
- The Capability_SpotWBMode is 1 (ON).

3.98. FmmManual

This will set the focal length [mm] of the lens specified by kNkMAIDCapability_ManualSetLensNo. (SETUP)

Capability	kNkMAIDCapability_FmmManual
Object types	Source
ulType	kNkMAIDCapType_Enum kNkMAIDArrayType_Unsigned
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray, kNkMAIDCapOperation_Set
Data	0(N/A), 6, 8, 13, 15, 16, 18, 20, 24, 25, 28, 35, 43, 45, 50, 55, 58, 70, 80, 85,86, 100, 105, 135, 180, 200, 300, 360, 400, 500, 600, 800, 1000, 1200,1400, 1600,2000, 2400, 2800, 3200, 4000 (Default: 0)

When Capability_LiveViewStatus is 1(On) , the ulOperations cannot be set into.

3.99. F0Manual

This will set the maximum aperture of the lens specified by kNkMAIDCapability_ManualSetLensNo. (SETUP)

Capability	kNkMAIDCapability_F0Manual
Object types	Source
ulType	kNkMAIDCapType_Enum kNkMAIDArrayType_Unsigned
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray, kNkMAIDCapOperation_Set
Data	0(N/A), 12, 14, 18, …, 190, 220 (Default: 0)

This capability returns the aperture value multiplied by 10.

(e.g.: If aperture is F1.2 , the module returns 12, if aperture is F19, returns 190)

When Capability_LiveViewStatus is 1(On) , the ulOperations cannot be set into.

3.100. EnableCopyright

This will set whether attach copyright information. (SETUP)

Capability kNkMAIDCapability_EnableCopyright

Object types Source

ulType kNkMAIDCapType_Boolean

ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set, kNkMAIDCapOperation_GetDefault

Data True: attach False: none

If any of the following, the ulOperations cannot be set into.

- During movie recording.
- The Capability_SpotWBMode is 1 (ON).

3.101. ArtistName

This will set the artist information. (SETUP)

Capability kNkMAIDCapability_ArtistName

Object types Source

ulType kNkMAIDCapType_String

ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set

Data String shorter than 36 bytes (not including termination '/0')

If the client set string longer than 36 bytes, the module uses 36 bytes from the head, and the space (0x20) before termination '¥0' of string will be ignored.

for example.)

ABCD□EFG□□□□□□□□'¥0'

□ shows a space(0x20) , so 8 space is ignored.

The character, which can be included in the string, is only an ASCII 90 characters. (refer to the table in the ShootingBankName.) When the other character is set, the module returns an error (kNkMAIDResult_ValueOutOfBounds).

If any of the following, the ulOperations cannot be set into.

- During movie recording.
- The Capability_SpotWBMode is 1 (ON).

3.102. CopyrightInfo

This will set the copyright information. (SETUP)

Capability kNkMAIDCapability_CopyrightInfo

Object types Source

ulType kNkMAIDCapType_String

ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set

Data String shorter than 54 bytes (not including termination '/0')

If the client set string longer than 54 bytes, the module uses 54 bytes from the head, and the space (0x20) before termination '¥0' of string will be ignored.

for example.)

ABCD□EFG□□□□□□□□'¥0'

□ shows a space(0x20) , so 8 space is ignored.

The character, which can be included in the string, is only an ASCII 90 characters. (refer to the table in the ShootingBankName.) When the other character is set, the module returns an error (kNkMAIDResult_ValueOutOfBounds).

If any of the following, the ulOperations cannot be set into.

- During movie recording.
- The Capability_SpotWBMode is 1 (ON).

3.103. ShutterSpeed

This will set the shutter speed.

Capability	kNkMAIDCapability_ShutterSpeed
Object types	Source
ulType	kNkMAIDCapType_Enum kNkMAIDArrayType_PackedString
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray, kNkMAIDCapOperation_Set
Data	Strings of shutter time in second. (e.g.) ”1”, “1/1.3”, “1/1.6”, “x 1/250”, “x 1/200”,

When the Capability_ExposureMode is set to “Program” or “Aperture Priority” or Scene Modes or Special Effects Modes, this capability cannot be set into.

When sequence error has occurred, the ulVisibility of this capability is set to invalid and ulOperations of this capability is set to read-only and the current value is invalid.

The information whether the exposure is over or under can not be acquired by getting only the value of this capability. In the condition that the information of the shutter speed being blinking is acquired form the value of Capability_BlinkingStatus, the exposure is over if the Capability_ShutterSpeed is maximum value. The exposure is under in the same condition if the Capability_ShutterSpeed is minimum value instead.

When during Movie Live View the Capability_MovieShutterSpeed is used for shutter speed setting.

When the Capability_SpotWBMode is 1 (ON). the ulOperations cannot be set into.

3.104. FlexibleProgram

This will set the Flexible program value.

Capability	kNkMAIDCapability_FlexibleProgram
Object types	Source
ulType	kNkMAIDCapType_Range
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set
Data	-5～+5EV（Default value: 0）

The module set the step values same as Capability_EVInterval. When the Capability_EVInterval, Capability_ExposureMode is changed, the capability is set to default(0), and the module sends to the client kMAIDEvent_CapChange or kMAIDEvent_CapChangeValueOnly.

When the Capability_ExposureMode is not “Program” or sequence error has occurred, the ulVisibility of this capability is invalid and the ulOperations of this capability cannot be set into and the current value is invalid.

When the Capability_SpotWBMode is 1 (ON). the ulOperations cannot be set into.

3.105. FocusPreferredArea

This will select the preferred focus area.

Capability kNkMAIDCapability_FocusPreferredArea

Object types Source

ulType kNkMAIDCapType_Enum
kNkMAIDArrayType_Unsigned

ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray,
kNkMAIDCapOperation_Set

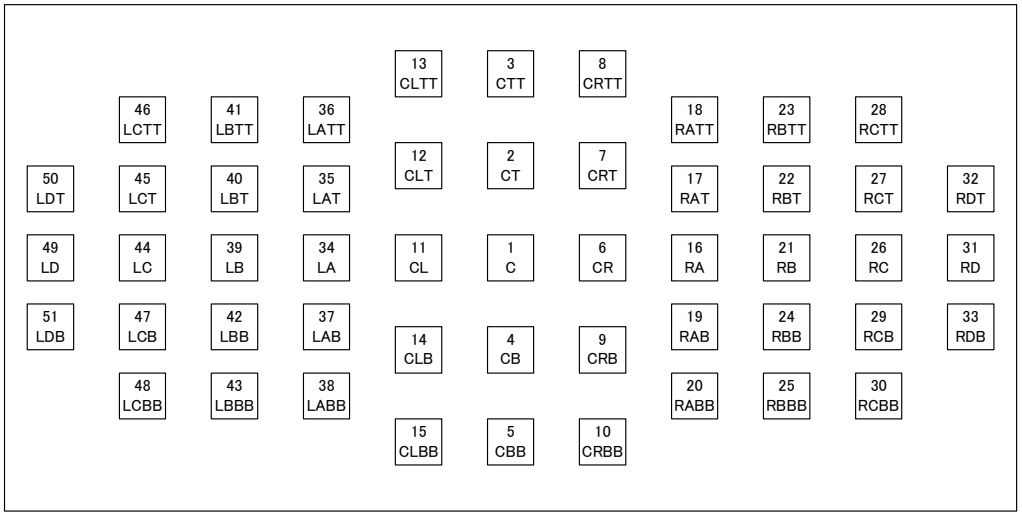
Data one of eNkMAIDFocusPreferred2
0 – 51 (default 1)

When the value of this capability is 0, it is shown that the focus point is not decided.

This capability will return kNkMAIDResult_ValueOutOfBounds, when 0 is set.

This capability is valid only when Capability_FocusAreaMode is "Single" or "Dynamic(21 points /51 points)" or "3D-tracking ".

When the Capability_FocusAreaMode is "Auto", the ulOperations cannot be set into.
Following figure is shown relationship between focus point and the value of this capability.



The value of this capability range is limited by the setting of Capability_AFAreaPoint.

AFAreaPoint	0 (51 points)	0 (11 points)
FocusPreferredArea	0 - 51	0, 1, 3, 5, 21,23, 25, 31, 39, 41, 43, 49

If any of the following, the ulOperations cannot be set into.

- The Capability_LiveViewStatus is 1 (ON).
- The Capability_FocusAreaMode is "Auto".

3.106. Aperture

This will set the aperture.

Capability	kNkMAIDCapability_Aperture
Object types	Source
ulType	kNkMAIDCapType_Enum kNkMAIDArrayType_PackedString
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray, kNkMAIDCapOperation_Set
Data	String of F value (e.g.) “1.4”, “1.6”, “1.8”...

When aperture is not set to minimum(FEE), this capability is read-only and the string of “FEE” is set. When this capability is “FEE”, the module can’t execute capture-command.

When CPU lens is not attached, this capability returns aperture of the Capability_F0Manual setting. If the Capability_F0Manual is set to “N/A”, returns zero.

When the Capability_ExposureMode is set to “Program” or “Speed Priority” or Scene Modes or Special Effects Modes, this capability is set to read-only.

When sequence error has occurred, the ulVisibility of this capability is set to invalid and ulOperations of this capability is set to read-only and the current value is invalid. If the ulOperations is changed, the module sends to the client kMAIDEvent_CapChange.

The information whether the exposure may be over or under can not be acquired by getting only the value of this capability. In the condition that the information of the aperture being blinking is acquired form the value of Capability_BlinkingStatus, the exposure is over if the Capability_ Aperture is minimum value. The exposure is under in the same condition if the Capability_ShutterSpeed is maximum value instead.

When "Aperture setting" in "Customized command dials" is "Aperture ring" and the lens attached other than g-lens, It is not related to the setting of Capability_EVInterval, always becomes the value of 1EV.

If any of the following, the ulOperations cannot be set into.

- The Capability_ExposureMode is Program, Speed Priority, Scene Modes or Special Effects Modes.
- Sequence error has occurred.
- The Capability_ApertureDial is False and Capability_LensType is not G type.
- The Capability_SpotWBMode is 1 (ON).

3.107. MeteringMode

This will get the metering mode.

Capability	kNkMAIDCapability_MeteringMode
Object types	Source
ulType	kNkMAIDCapType_Unsigned
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set kNkMAIDCapOperation_GetDefault
Data	one of eNkMAIDMeteringMode 0: Matrix 1: Center weighted 2: Spot

When the change of this capability during "Live View Photography" or "Movie Live View", this capability value is applied Photograph shooting setting.

If the value of this capability is set to 0(Matrix) when CPU lens in not attached and non-CPU lens data is N/A, 1(Center weighted) will be applied for metering mode.

If the Operations are changed, the module sends kNkMAIDEvent_CapChange to the client.

If any of the following, the ulOperations cannot be set into.

- The Capability_ExposureMode is Scene Modes or Special Effects Modes.
- During AE locked..
- The CPU lens is not attached, and Exposure Modes is “Program” or “Speed priority”.
- The Capability_SpotWBMode is 1 (ON).

3.108. ExposureMode

This will select the exposure mode.

Capability	kNkMAIDCapability_ExposureMode
Object types	Source
ulType	kNkMAIDCapType_Enum
	kNkMAIDArrayType_Unsigned
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray,
	kNkMAIDCapOperation_Set
Data	one of eNkMAIDExposureMode
	0: Program mode
	1: Aperture priority
	2: Speed priority
	3: Manual
	5: [Scene Modes]Auto
	13: [Scene Modes] Auto(flash off)
	14: [Scene Modes]SCENE
	15: [User Mode1]U1
	16: [User Mode2]U2
	17: [Special Effects]EFFECTS

The value, from 5 to 13 to 14 is called “Scene mode”. If [14: SCENE] is set, the “Scene mode” set by Capability_SceneMode will be used.

If [15: U1] or [16: U2] is set, Capability_Exposure Modes set by Capability_UserMode1 or Capability_UserMode2 will be used.

When the value of kNkMAIDCapability_LiveViewStatus is ON, Exposure Modes is “Program mode”, “Aperture priority”, “Speed priority”, “Manual”.

If any of the following, the ulOperations cannot be set into.

- The Capability_LockCamera is False;
- During Movie Live View.

3.109. ExposureComp

This will set the exposure compensation value.

Capability kNkMAIDCapability_ExposureComp

Object types Source

ulType kNkMAIDCapType_Range

ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set

Data -5～+5EV（Default value: 0）

The module sets the step value same as Capability_EVInterval. When the Capability_EVInterval is changed, the module sends to the client kMAIDEvent_CapChange.

If any of the following, the ulOperations cannot be set into.

- The Capability_ExposureMode is Scene Modes or Special Effects Modes(except for "Night Vision").
- The Capability_SpotWBMode is 1 (ON).

3.110. ShootingMode

This will set the shooting mode.

Capability kNkMAIDCapability_ShootingMode

Object types Source

ulType kNkMAIDCapType_Enum
kNkMAIDArrayType_Unsigned

ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray,
kNkMAIDCapOperation_Set

Data one of eNkMAIDShootingMode

0: SingleFrame
1; Continuous L
2: Continuous H
3: Self-timer
4: Mirror up
8: Quiet

If any of the following, the ulOperations cannot be set into.

- The Capability_LockCamera is False.

3.111. ContinuousShootingNum

This will set the number of shots in continuous shooting by host.

Capability kNkMAIDCapability_ContinuousShootingNum
Object types Source
ulType kNkMAIDCapType_Unsigned
ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set
kNkMAIDCapOperation_GetDefault
Data 1 – 100 (Default 1)

The maximum value of this capability corresponds with the default value of Capability_RemainContinuousShooting.
When the value of Capability_EnableBracketing is ON and execute bracketing on continuous mode, the client must set the value more than the bracketing number of shot to this capability.
But if the client sets the value more than the bracketing number of shot, bracketing will be stop at the setting the bracketing number of shot on continuous mode.
The actual number of shot on continuous mode will affect by the setting of Capability_SaveMedia.
When the Capability_SpotWBMode is 1 (ON), the ulOperations of this capability cannot be set into.

Capability_SaveMedia	The actual number of shot on continuous mode
0 : Card	The minimum number among the below. ・The value of this capability. ・Capability_ShootingLimit, ・Capability_RemainContinuousShooting. ・The remain of Capability_BracketingType(while bracketing shooting)
1 : SDRAM	The minimum number among the below. ・The value of this capability. ・Capability_ShootingLimit. ・Capability_RemainContinuousShooting, ・The remain of Capability_BracketingType(while bracketing shooting)
2 : Card + SDRAM	The minimum number among the below. ・The value of this capability. ・Capability_ShootingLimit. ・Capability_RemainContinuousShooting, ・Capability_RemainCountInMedia. ・The remain of Capability_BracketingType(while bracketing shooting)

3.112. FocusAreaMode

This will select the AF area mode for phase detection on still image shooting.

Capability kNkMAIDCapability_FocusAreaMode

Object types Source

ulType kNkMAIDCapType_Enum
kNkMAIDArrayType_PackedString

ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray,
kNkMAIDCapOperation_Set

Data

Menu	string	Capability_FocusMode	"Open F value" greater than 5.6 lens attached.
9-points dynami-area AF	"Dynamic(9 points)"	AF-C,AF-A	9-points dynami-area AF
Single-point AF	"Single"	AF-S, AF-C,AF-A	Single-point AF
Auto-areaAF	"Auto"	AF-S, AF-C,AF-A	Single-point AF
3D-tracking	"3D-tracking "	AF-C,AF-A	Single-point AF
21-points dynami-area AF	"Dynamic(21 points)"	AF-C,AF-A	21-points dynami-area AF
51-points dynami-area AF	"Dynamic(51 points)"	AF-C,AF-A	51-points dynami-area AF

In the following table, the default value is changed by Scene modes.

When the setting of Capability_ExposureMode is changed to Scene Modes, the value of this capability will be changed to each default value.

Capability_ExposureMode Capability_SceneMode	Default
Auto Portrait (SCENE) Landscape (SCENE) Night Portrait (SCENE) Night Landscape (SCENE) Flash Off Child (SCENE) Party/Indoor (SCENE) Beach/Snow(SCENE) Sunset (SCENE) Dusk/Dawn (SCENE) Blossom (SCENE) Autumn Colors (SCENE) Color Sketch(EFFECTS) Selective Color(EFFECTS)	Auto
Close up(SCENE) Candlelight(SCENE) Food(SCENE) Silhouette(EFFECTS) High Key(EFFECTS) Low Key(EFFECTS)	Single
Night Vision(EFFECTS) Miniature Effect(EFFECTS)	Single (unchangeable)
Sports(SCENE) Pet Portrait(SCENE)	Dynamic(51points)

When Capability_AFMode is AF-S(0), "3D-tracking" and "Dynamic(9/21/51points)" cannot be set

into.

When the value of this capability is “3D-tracking” or “Dynamic(9/21/51points)” and sets the value of Capability_AFMode to AF-S(0), The value of this capability is changed to “Single”.

When the Capability_AFMode is MF(0), or the CPU lens is not attached, or the Capability_ExposureMode is set to Special Effects Modes and the Capability_EffectMode is set to Night Vision or Miniature Effect, or the Capability_LiveViewStatus is 1(ON), the ulOperations of this capability cannot be set into.

3.113. EnableBracketing

This will set whether bracketing is active or not.

Capability	kNkMAIDCapability_EnableBracketing
Object types	Source
ulType	kNkMAIDCapType_Boolean
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set, kNkMAIDCapOperation_GetDefault
Data	True: ON False: OFF

The ulOperations of this capability is changed, the module sends to the client kMAIDEvent_CapChange.

These following cases, the value of this capability is changed to False(OFF).

- When Capability_BracketingVary Capability_BracketingVary is set to “AE Only”, “Flash Only”, “AE & Flash”, and the value of Capability_EVInterval is changed.
- When Movie Live View started during Capability_BracketingVary is set to "Flash only".
- When Capability_BracketingVary set to "Flash only" during Movie Live View.

If any of the following, the ulOperations cannot be set into.

- The Capability_HDRMode is 1(ON:single photo) or 2(ON:series).
- The Capability_ExposureMode is Scene Modes or Special Effects Modes.
- The value of Capability_BracketingVary is “White Balance”, and the Capability_CompressionLevel is either ”RAW”, “RAW+JPEG(Basic)” ,“RAW+JPEG(Normal)” or “RAW+JPEG(Fine).
- During Movie Live View, and the Capability_BracketingVary is “Flash only”.
- The Capability_SpotWBMode is 1 (ON).

3.114. AEBracketingStep

This will set the exposure increment for AE, SB, AE/SB bracketing.

Capability kNkMAIDCapability_AEBracketingStep

Object types Source

ulType kNkMAIDCapType_Enum

kNkMAIDArrayType_Unsigned

ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray,

kNkMAIDCapOperation_Set

Data one of eNkMAIDAEBracketingStep

0: 1/3EV

1: 1/2EV

2: 2/3EV

3: 1EV

7: 2EV

8: 3EV

The ulOperations of this capability is changed, the module sends to the client kMAIDEvent_CapChange.

The array data is affected by the Capability_EVInterval setting as following table.

EVInterval	AEBracketingStep
1/3EV	1/3EV, 2/3EV, 1EV, 2EV, 3EV
1/2 EV	1/2EV, 1EV, 2EV, 3EV

When the value of Capability_EVInterval is changed, this capability is changed to 3(1EV).

If any of the following, the ulOperations cannot be set into.

- The Capability_ExposureMode is Scene Modes or Special Effects Modes.
- The Capability_BracketingVary is " White Balance" or "ADL bracketing".
- The Capability_EnableBracketing is OFF.
- The Capability_SpotWBMode is 1 (ON).

3.115. WBBracketingStep

This will set the white balance increment for WB bracketing.

Capability	kNkMAIDCapability_WBBracketingStep
Object types	Source
ulType	kNkMAIDCapType_Enum kNkMAIDArrayType_Unsigned
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray, kNkMAIDCapOperation_Set
Data	one of eNkMAIDWBBracketingStep 0: 1Step 1: 2Step 2: 3Step

When the Capability_EnableBracketing is ON(true) and the Capability_BracketingVary is “White Balance”, this capability is valid.

The ulOperations of this capability is changed, the module sends to the client kMAIDEvent_CapChange.

If any of the following, the ulOperations cannot be set into.

- The Capability_ExposureMode is Scene Modes or Special Effects Modes.
- The Capability_EnableBracketing is OFF.
- The Capability_BracketingVary is not “White Balance”.
- The Capability_SpotWBMode is 1 (ON).

3.116. BracketingType

This will select the combination bracketing shots and direction when AE, White balance bracketing.

Capability kNkMAIDCapability_BracketingType

Object types Source

ulType kNkMAIDCapType_Enum

kNkMAIDArrayType_Unsigned

ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray,

Data one of eNkMAIDBracketingType

0: Minus_2

1: Plus_2

2: Minus_3

3: Plus_3

4: Both_3

5: Both_5

When the Capability_EnableBracketing is ON(true) and the Capability_ExposureMode is not Scene Modes or Special Effects Modes, and the Capability_BracketingVary is not “ADL bracketing”, this capability is valid.

The ulOperations of this capability is changed, the module sends to the client kMAIDEvent_CapChange.

When the Capability_BracketingVary is “AE Only” or “Flash Only” or “AE & Flash”, and the Capability_AEBracketingStep is 8(3EV) , the ulOperations cannot be set into 2(Minus_3), 3(Plus_3), 5(Both_5).

If any of the following, the ulOperations cannot be set into.

- The Capability_ExposureMode is Scene Modes or Special Effects Modes.
- The Capability_EnableBracketing is OFF.
- The Capability_BracketingVary is “ADL bracketing”.
- The Capability_SpotWBMode is 1 (ON).

3.117. ADLBracketingType

This will select the bracketing shots when ADL bracketing.

Capability kNkMAIDCapability_ADLBracketingType

Object types Source

ulType kNkMAIDCapType_Enum

kNkMAIDArrayType_Unsigned

ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray,

Data one of eNkMAIDADLBracketingType

0：2 shots（Off - UserSettings)

1：3 shots(Off - Normal - UserSettings)

When the Capability_EnableBracketing is ON(true) and the Capability_ExposureMode is not Scene Modes or Special Effects Modes, and the Capability_BracketingVary is “ADL bracketing”, this capability is valid.

The ulOperations of this capability is changed, the module sends to the client kMAIDEvent_CapChange.

If any of the following, the ulOperations cannot be set into.

- The Capability_ExposureMode is Scene Modes or Special Effects Modes.
- The Capability_EnableBracketing is OFF.
- The Capability_BracketingVary is not “ADL bracketing”.
- The Capability_SpotWBMode is 1 (ON).

3.118. LiveViewStatus

This will start or stop Live view and show status of Live view.

Capability kNkMAIDCapability_LiveViewStatus

Object types Source

ulType kNkMAIDCapType_Unsigned

ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set, kNkMAIDCapOperation_GetDefault

Data one of eNkMAIDLiveViewStatus

0: OFF

1: ON

When the client start Live view, the client must set the value of this capability to ON(1). And when the client stop Live view, the client must set the value of this capability to OFF(0).

In case of kNkMAIDCapOperation_Get, the value of this capability will show the current status of Live view.

If the client want to get Live view image by Capability_GetLiveViewImage, the client have to set the value of this capability to ON(1) beforehand.

The client have to check this value before closing Source object, and if the value of this capability is ON(1), have to set to OFF(0).

When the Live view is started, the status of camera will be changed to Lock camera internally, but the value of Capability_LockCamera kept the current value.

The execution of Capability_AFCapture, Capability_PreCapture, Capability_CaptureDustImage, and Capability_LockCamera is prohibited while Live view is executing.

The client has to check the value of Capability_LiveViewProhibit, and when the value of Capability_LiveViewProhibit is not 0, Live view will not be started.

When the Capability_ExposureMode is not ”Program mode”, “Aperture priority”, “Speed priority”, “Manual”, the ulOperations of this capability cannot be set into.

3.119. LiveViewProhibit

This will show the status of Live view prohibition.

Capability kNkMAIDCapability_LiveViewProhibit

Object types Source

ulType kNkMAIDCapType_Unsigned

ulOperations kNkMAIDCapOperation_Get

Data one of eNkMAIDLiveViewProhibit

The Live View prohibition is shown by the OR value of the following definition value. When 0 returns, the status is not Live View prohibition.

When the value of this capability is not 0, it shows the status of Live View prohibition.

When the value of Capability_ApertureDial is True and the CPU lens with aperture ring

is attached, “The setting by Aperture ring is valid.”(0x00000020) will be set.

When the value of Capability_BatteryLevel is 1, “battery shortage”(0x00000100) will be set.

value	Conditions prohibited
0x80000000	Exposure Modes is non-P,S,A,M.
0x04000000	Saving Image
0x00400000	Release mode is mirror-up
0x00200000	Bulb warning, ShutterSpeed is Time.
0x00020000	High temperature and can not start live view.
0x00008000	Capture command is executing. ■ Recording media is “Card” The while until receiving kNkMAIDEvent_CaptureComplete(data=0). ■ Recording media is “SDRAM” The while until receiving kNkMAIDEvent_CaptureComplete(data=1). ■ Recording media is “Card+SDRAM” The while until receiving kNkMAIDEvent_CaptureComplete (data=0) and kNkMAIDEvent_CaptureComplete (data=1).
0x00004000	Recording media is “Card” or “Card + SDRAM” and when no memory card is inserted in the camera, Release locked setting.
0x00001000	There is image in camera SDRAM.
0x00000800	Non-CPU lens is attached, and ExposureMode is not Manual or Aperture priority.
0x00000200	TTL error
0x00000100	battery shortage
0x00000020	During setting value by Aperture ring.
0x00000010	All button pushed error.
0x00000004	Sequence error

3.120. LiveViewImageZoomRate

This will set the zoom rate for Live View image.

Capability kNkMAIDCapability_LiveViewImageZoomRate

Object types Source

ulType kNkMAIDCapType_Enum
kNkMAIDArrayType_Unsigned

ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray,
kNkMAIDCapOperation_Set

Data one of eNkMAIDLiveViewImageZoomRate
0: Whole display
1: 25 %
2: 33 %
3: 50 %
4: 66.7 %
5: 100 %
6: 200 %

When the Live View is started, the value of this capability will be set to default value automatically.

When the Capability_LiveViewStatus is not ON(1), and the Capability_MovRecInCardStatus is not 0(OFF), the ulVisibility of this capability is invalid and ulOperations cannot be set into.

When released the state of waiting to acquire SpotWB, this capability is "0:Whole display".

3.121. CameraInclination

This will get inclination of camera.

Capability kNkMAIDCapability_CameraInclination

Object types Source

ulType kNkMAIDCapType_Unsigned

ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetDefault

Data one of eNkMAIDCameraInclination

0: Level (included when the inclination cannot be detected)

1: Grip is top

2: Grip is bottom

3: Level (Up Down)

When the Capability_CameraInclinationMode is false, or the camera cannot detect inclination of itself, the value of this capability is zero(Level).

3.122. RemainContinuousShooting

This will get the number of shot that can be recorded on SDRAM or the card in the continuous shooting mode by the command.

Capability kNkMAIDCapability_RemainContinuousShooting

Object types Source

ulType kNkMAIDCapType_Unsigned

ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetDefault

Data 0 – 100 (Default: 100)

The value of this capability is always under the value of Capability_ShootingLimit.

The value of this capability will be changed by the following setting.

- Capability_CompressionLevel
- Capability_ImageSize
- Capability_ HDRMode
- Capability_Active_D_Lighting
- Capability_NoiseReduction
- Capability_NoiseReductionHighISO
- Capability_ShootingLimit
- Capability_CCDDataMode
- Capability_JpegCompressionPolicy
- Capability_CompressRAWEx
- Capability_CompressRAWBitMode

The ulOperations of this capability is changed, the module sends to the client kNkMAIDEvent_CapChangeValueOnly.

3.123. RemainCountInMedia

This will get the number of shot that can be saved in Card in current image quality.

Capability kNkMAIDCapability_RemainCountInMedia
Object types Source
ulType kNkMAIDCapType_Unsigned
ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetDefault
Data 0 — 65535 (Default:0)

When a card is not inserted, the value of this capability is 0.

The value of this capability is changed by the setting of camera.

When Capability_Slot2ImageSaveMode is "0: Overflow", this capability returns the total number of slot1 and slot2. If the total number is over 65535, the upper limit is 65535.

When the Capability_ActiveSlot is 2(slot2), even if there is a recordable area in slot 1, the number of records that can be returned in slot 2.

3.124. LockExposure

This will get lock status of auto exposure.

Capability kNkMAIDCapability_LockExposure
Object types Source
ulType kNkMAIDCapType_Boolean
ulOperations kNkMAIDCapOperation_Get
Data True: Lock False: Unlock

3.125. LockFocus

This will get lock status of auto focus.

Capability kNkMAIDCapability_LockFocus
Object types Source
ulType kNkMAIDCapType_Boolean
ulOperations kNkMAIDCapOperation_Get
Data True: Lock False: Unlock

3.126. LockFV

This will get the status of FV lock.

Capability kNkMAIDCapability_LockFV
Object types Source
ulType kNkMAIDCapType_Boolean
ulOperations kNkMAIDCapOperation_Get
Data True: Lock False: Unlock

3.127. ExposureStatus

This will get the exposure indicator status of Camera.

Capability kNkMAIDCapability_ExposureStatus
Object types Source
ulType kNkMAIDCapType_Float
ulOperations kNkMAIDCapOperation_Get
Data ExposureValue (EV) step = 1/12 (EV)

3.128. InfoDisplayErrStatus

This will show error display status on the information panel.

Capability kNkMAIDCapability_InfoDisplayErrStatus
Object types Source
ulType kNkMAIDCapType_Boolean
ulOperations kNkMAIDCapOperation_Get
Data True: ON(Error display) False: OFF

The value of this capability is updated only if the information panel of the camera body is turned on. When the information panel is turned off, the value of this capability is set to OFF (False).

3.129. FocalLength

This will get the focal length of the lens.

Capability kNkMAIDCapability_FocalLength
Object types Source
ulType kNkMAIDCapType_Float
ulOperations kNkMAIDCapOperation_Get
Data lfValue (mm)

When a CPU lens is not attached, the value of this capability is set to 0.

3.130. FocusMode

This will get the focus mode.

Capability kNkMAIDCapability_FocusMode
Object types Source
ulType kNkMAIDCapType_Unsigned
ulOperations kNkMAIDCapOperation_Get
Data one of eNkMAIDFocusMode
0: MF
1: AF-S
2: AF-C
3: AF-A
4: AF-F

When the lens is not attached, the value of this capability is always MF.

3.131. BracketingCount

This will get the number of shots on AE Only or ADL bracketing.

Capability kNkMAIDCapability_BracketingCount
Object types Source
ulType kNkMAIDCapType_Unsigned
ulOperations kNkMAIDCapOperation_Get
Data [AE Only] 1 – 5
[ADL Bracketing] 1 – 3

When the Capability_EnableBracketing is ON(True) and the Capability_BracketingVary is either "AE Only" or "Flash Only" or "AE & Flash" or "ADL bracketing", this capability is valid. If this capability is invalid, returns 0.

3.132. InternalFlashStatus

This will show the status of Built-in flash.

Capability kNkMAIDCapability_InternalFlashStatus
Object types Source
ulType kNkMAIDCapType_Unsigned
ulOperations kNkMAIDCapOperation_Get
Data one of eNkMAIDInternalFlashStatus
0: Ready 1:Not Ready 2: Close

3.133. InternalFlashComp

This will set the flash compensation of Built-in flash.

Capability kNkMAIDCapability_InternalFlashComp
Object types Source
ulType kNkMAIDCapType_Range
ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set
Data -3～+1 (Default:0)

The module sets the same step value as the value of Capability_EVInterval.

The flash compensation of Built-in flash is actually used when Capability_InternalFlashStatus is not “Close” and Capability_InternalSplMode is “TTL” or when Capability_ExternalFlashStatus is not “Not Exist” and Capability_ExternalNewTypeFlashMode is iTTL-BL(1), iTTL(2), AA(3).

If any of the following, the ulOperations cannot be set into.

- The Capability_InternalFlashStatus is Close, and the Capability_ExternalFlashStatus is “Not Exist”.
- The Capability_ExposureMode is Scene Modes or Special Effects Modes.
- During Movie Live View.
- The Capability_SpotWBMode is 1 (ON).

3.134. ExternalFlashStatus

This will shows the status of External flash.

Capability kNkMAIDCapability_ExternalFlashStatus
Object types Source
ulType kNkMAIDCapType_Unsigned
ulOperations kNkMAIDCapOperation_Get
Data one of eNkMAIDExternalFlashStatus
0: Ready 1:Not Ready 2: Not Exist

3.135. ExternalFlashComp

This will set the flash compensation of the external speedlight.

Capability kNkMAIDCapability_ExternalFlashComp
Object types Source
ulType kNkMAIDCapType_Range
ulOperations kNkMAIDCapOperation_Get
Data -3～+3EV (1/6EV step)

This capability is valid when Capability_ExternalNewTypeFlashMode is either iTTL-BL(1), iTTL(2), AA(3) or GN(5).

3.136. ExternalFlashSort

This will get the sort of external speedlight.

Capability kNkMAIDCapability_ExternalFlashSort

Object types Source

ulType kNkMAIDCapType_Unsigned

ulOperations kNkMAIDCapOperation_Get

Data

0: non- communication.
2: new communication (with setting display)
4: new communication (without setting display:SB-400).*
3: Not exist.

* The camera cannot detect "1: old communication.", so this capability returns always "0: non-communication." when an Old communication speedlight is attached.

The relationship of external speedlight type and the speedlight made by Nikon is shown in the following table.

New communication (with setting display)	New communication (without setting display)	Old communication	Non- communication	Not detected
SB-910 SB-900、 SB-800、 SB-700、 SB-600、 SU-800	SB-400	SB-80DX、 SB-50DX、 SB-28DX、 SB-28D、 SB-28、 SB-27、 SB-26、 SB-25、 SB-24、	SB-30、 SB-29、 SB-29S、 SB-23、 SB-22、 SB-22S、 SB-21A、 SB-21B、 SB-20、 SB-19、 SB-18、 SB-17、 SB-16A、 SB-16B、 SB-15、 SB-14、 SB-12、 SB-11、 SB-10、 SB-E	SB-9、 SB-8、 SB-7、 SB-6、 SB-5、 SB-4、 SB-3、 SB-2、 SB-1

3.137. ExternalNewTypeFlashMode

This will get flash mode when the Capability_ExternalFlashSort is 2 (new communication (with setting display)) or 4 (new communication (without setting display))

Capability kNkMAIDCapability_ExternalNewTypeFlashMode

Object types Source

ulType kNkMAIDCapType_Enum
kNkMAIDArrayType_Unsigned

ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray,

Data one of eNkMAIDExternalNewTypeFlashMode
0: OFF
1: iTTL-BL
2: iTTL
3: AA(Auto aperture)
4: A(Non-TTL auto)
5: GN(Range-priority manual)
6: M(manual)
7: Repeating flash
8: The external speed light, new communication does not exist.

When the value of Capability_ExternalFlashSort is 4 (new communication (without setting display)), the value of this capability is changed by Capability_InternalSplMode setting.

3.138. LensInfo

This will get the focal length and minimum F number.

Capability kNkMAIDCapability_LensInfo

Object types Source

ulType kNkMAIDCapType_String

ulOperations kNkMAIDCapOperation_Get

Data (e.g.)”35-70/F3.3-4.5D”

In the case of D type, G type, and VR lens, "D", "G", and "VR" are added to an end.

3.139. AFCapture

This will take a picture after auto focus and save an image to specified media.

Capability kNkMAIDCapability_AFCapture

Object types Source

ulType kNkMAIDCapType_Process

ulOperations kNkMAIDCapOperation_Start

This will take a picture after auto focus. If the Capability_FocusMode is MF (0) or lens is not attached, the camera does shooting immediately without auto focus.

When auto focus failed, whether taking a picture or returning out of focus error, that is depends on the setting of Capability_FocusMode or Capability_AFsPriority or Capability_AFcPriority.

When continuous shooting mode is set, the number of shots set by the Capability_ ContinuousShootingNum is taken.

The media saved an image is specified by Capability_SaveMedia. When there is not free space in specified media, this capability returns kMAIDResult_MediaFull. And this capability returns kNkMAIDResult_NoMedia when card is under being formatted or no card is inserted.

If any of the following, the ulOperations cannot be set into.

- The Capability_LiveViewStatus is 1 (ON).
- The Capability_SpotWBMode is 1 (ON).
- The Capability_ShutterSpeed is Time.

3.140. ContrastAF

This will control contrast AF when Live view is executed on Tripod mode.

Capability kNkMAIDCapability_ContrastAF

Object types Source

ulType kNkMAIDCapType_Unsigned

ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set

one of eNkMAIDContrastAF

0x00: start AF (effective only as the Set value)

0x01: stop AF (effective only as the Set value)

0x10: AF finishes in focus (effective only as the Get value)

0x11: AF finishes out of focus (effective only as the Get value)

0x12: It is operating AF (effective only as the Get value)

Contrast AF will start when the client set 0x00 (start AF). And the module will return the response without wait for AF finish.

The client can confirm whether contrast AF finish correctly by getting value of this capability, or referring “focus drive state” of “display information” in Live view image. (please refer NkMAIDCapability_GetLiveViewImage)

When the client wants to stop contrast AF, the client will set 0x01 (stop AF). After contrast AF finish, the module returns response.

This capability is valid when Capability_FocusMode isn’t MF(0) and CPU lens is attached and also

Capability_LiveViewStatus is ON(1).

3.141. PreCapture

This will take a picture for presetting white balance.

Capability kNkMAIDCapability_PreCapture
Object types Source
ulType kNkMAIDCapType_Process
ulOperations kNkMAIDCapOperation_Start
Data None

When Capability_LiveViewStatus is ON(1), the ulVisibility and ulOperations of this capability is set to invalid.

If any of the following, the ulOperations of this capability is set to invalid.

- The Capability_LiveViewStatus is 1 (ON).
- The Capability_LiveViewSelector is "1: Movie Live View" and the Capability_MovieReleaseButton is "1: Record movies".
- The Capability_SpotWBMode is 1 (ON).
- The Capability_ShutterSpeed is Time.

3.142. MFDriveStep

This will set the driving step of lens for adjusting focus position when Live view is executed on Tripod mode.

Capability kNkMAIDCapability_MFDriveStep
Object types Source
ulType kNkMAIDCapType_Range
ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set
Data driving step (Number of pulses) 1 to 32767

This capability will save the driving step internally, does not send request for adjusting focus position to camera. Capability_MFDrive will send request for adjusting focus position to camera with this capability value actually.

This capability is valid when Capability_FocusMode isn't MF(0) and CPU lens is attached and also Capability_LiveViewStatus is ON(1). Otherwise the ulVisibility and ulOperations of this capability is set to invalid.

3.143. MFDrive

This will adjust focus position when live view executed on Tripod mode.

Capability kNkMAIDCapability_MFDrive
Object types Source
ulType kNkMAIDCapType_Unsigned
ulOperations kNkMAIDCapOperation_Set
Data one of eNkMAIDMFDrive
0: infinity -> close
1: close -> infinity

This will send request to adjust focus position with the setting of this capability and the step of Capability_MFDriveStep.

The module will return response as soon as the camera starts adjusting manual focus position, the module doesn't wait to finish manual focus driving. If manual focus driving reaches the end of focus area, the module will return kNkMAIDResult_MFDriveEnd.

After this capability is executed correctly, the client can confirm whether manual focus dri ving finish correctly by getting value of this capability, or referring "focus drive state" of "D isplay information" in Live view image. (please refer NkMAIDCapability_GetLiveViewImag e)

This capability is valid when Capability_FocusMode isn't MF(0) or AF-F(4) and CPU lens is attached and also Capability_LiveViewStatus is ON(1).

3.144. ContrastAFArea

This will change focus point of contrast AF when Live view is executed on Tripod mode.

Capability kNkMAIDCapability_ContrastAFArea
Object types Source
ulType kNkMAIDCapType_Point
ulOperations kNkMAIDCapOperation_Set
Data struct NkMAIDPoint
{
SLONG x; -----Coordinates of X axis
SLONG y; -----Coordinates of Y axis
}

This capability set the focus point by using x and y of NkMAIDPoint structure.

The value range of x and y is defined by "total size" of "Display information" in Live view image. (please refer NkMAIDCapability_GetLiveViewImage)

But the range that can be actually set becomes an area where "size of the AF frame" length and width size half was subtracted from the length and width size of "total size" respectively.

When the value that exceeds the range that can be set to x and y is set, the maximum or minimum value will be used as this value.

This capability can be set when Capability_FocusMode 0(MF) or CPU lens is not attached.

If any of the following, the ulOperations of this capability is set to invalid.

- The Capability_SpotWBMode is 1 (ON).
- The Capability_LiveViewStatus is 0（OFF）.

3.145. CaptureDustImage

This will take a dust off ref photo and saved to specified media.

Capability kNkMAIDCapability_CaptureDustImage

Object types Source

ulType kNkMAIDCapType_Process

ulOperations kNkMAIDCapOperation_Start

The format type of dust off ref photo is kNkMAIDFileDataType_NDF.

When the client deletes a dust off ref photo by Capability_DeleteDramImage, the client must use Item ID notified by data parameter of kNkMAIDEvent_AddChild as Capability_CurrentPreviewID.

The media saved an image is specified by Capability_SaveMedia. When there is not free space in specified media, this capability returns kMAIDResult_MediaFull. And this capability returns kNkMAIDResult_NoMedia when card is under being formatted or no card is inserted.

If any of the following, the ulOperations of this capability is set to invalid.

- The Capability_LiveViewStatus is 1 (ON).
- The lens is not attached.
- The Capability_ShootingMode is “4: Mirror up”.
- The Capability_LiveViewSelector is “1: Movie Live View” and the Capability_MovieReleaseButton is ” 1: Record movies”.
- The Capability_SpotWBMode is 1 (ON).
- The Capability_ShutterSpeed is Time.

3.146. DeleteDramImage

This will delete DRAM image specified by Capability_CurrentItemID.

Capability kNkMAIDCapability_DeleteDramImage

Object types Source

ulType kNkMAIDCapType_Process

ulOperations kNkMAIDCapOperation_Start

The DRAM image to be deleted is specified by Capability_CurrentItemID.

This capability execution timing is limited to the following case.

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

The client will issue Capability_Acquire for Image object and cancel Capability_Acquire by kNkMAIDCommand_Abort, and set Capability_CurrentItemID and execute this capability, so, the deletion will be completed.

In case of deletion of RAW+JPEG, if the client executes this capability for JPEG, the both of RAW and Jpeg files will be deleted at the same time.

When the client deletes DRAM image after receiving kNkMAIDEvent_AddChild, the client must close Item objcet. The module does not close Item object.

This capability is not supported when an image is saved on Crad.

To Delete SDRAM image by this capability is prohibited, when it is applied for either of condition below. In this case, this capability returns kNkMAIDResult_NotSupported.

- The value of Capability_SaveMedia is “2: Card + SDRAM”.
- The value of Capability_SaveMedia is “2: Card + SDRAM”, and it has not completed to read all SDRAM image, after Capability_Capture or Capability_AFCapture or Capability_CaptureDustImage is executed.

During movie recording, the ulOperations of this capability is set to invalid.

3.147. RawJpegImageStatus

This will get whether the image is taken on RAW+JPEG mode.

Capability kNkMAIDCapability_RawJpegImageStatus

Object types Image

ulType kNkMAIDCapType_Unsigned

ulOperations kNkMAIDCapOperation_Get

Data one of eNkMAIDRawJpegImageStatus
0: Single 1: Raw+JPEG

3.148. CurrentItemID

This will specify the DRAM image operated now.

Capability kNkMAIDCapability_CurrentItemID

Object types Source

ulType kNkMAIDCapType_Unsigned

ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set

Item ID is used as an identifier that specifies the image data in SDRAM.

Item ID is notified by data parameter of kNkMAIDEvent_AddChild.

The value of this capability is referred by Capability_DeleteDramImage.

3.149. GetLiveViewImage

This will get Live view image.

Capability kNkMAIDCapability_GetLiveViewImage

Object types Source

ulType kNkMAIDCapType_Array
kNkMAIDArrayType_Unsigned

ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray

The client will get the size of Live view image by kNkMAIDCapOperation_Get, and get a actual Live view data by kNkMAIDCapOperation_GetArray.

Every time, the size of Live view image need not be confirmed with kNkMAIDCapOperation_Get in this capability before execution of kNkMAIDCapOperation_GetArray because the specification of Live view image is always fixation.

When the client want to get Live view image with kNkMAIDCapOperation_GetArray, the client must allocate the buffer for the maximum size, and set buffer to kNkMAIDArray.pData, and set allocate size to kNkMAIDArray.ulElements.

After reading preview image, kNkMAIDArray.ulElements will be updated with the actual size of Live view image I, the Live view image will be set to kNkMAIDArray.pData.

When Capability_LiveViewStatus is OFF(0), the ulOperations of this capability is set to read-only, kNkMAIDCapOperation_GetArray is invalid.

If Live view is stopped by camera automatically (including when the live view time limit passes), the module returns kNkMAIDResult_NotLiveView.

Live view image is consisted of “Display information” and “Live view image(JPEG).”

The pixel size of Live view image is different in each Live view data, each detailed information is set to “Display information” area.

Specification of Live view image

image quality	maximum file size
Jpeg Basic	Header size 8 byte 376 byte / Display information 45Kbyte / Max Live view image

The format of the Live view image is shown below.

	Display information area size		4Byte	
	Live view image area size		4Byte	
Display information	Attached JPEG image size	Horizontal size	2Byte	JPEG image size is the size that has been set in kNkMAIDCapability_LiveViewImageSize.
		Vertical size	2Byte	
	Whole size	Horizontal size	2Byte	Standard of the coordinates
		Vertical size	2Byte	
	Display area size	Horizontal size	2Byte	The whole size is equal to the display area size when the image is not enlarged.
		Vertical size	2Byte	
	Display center coordinates	Horizontal size	2Byte	
		Vertical size	2Byte	
	AF frame size (*1)	Horizontal size	2Byte	
		Vertical size	2Byte	
	AF frame center coordinates (*1)	Horizontal size	2Byte	
		Vertical size	2Byte	
	Reserve		4Byte	
	Selected focus area		1Byte	Fixed to 0
	Rotation direction		1Byte	0: No rotation 1: Rotate counterclockwise 2: Rotate clockwise 3: Upside down
	Focus driving status		1Byte	0: Not driving, 1: Driving
	Reserve		1Byte	
	Reserve		4Byte	
	Reserve		2Byte	
	Countdown time		2Byte	Countdown every one second starting from 3600 (one hour) ; countdown starting from thirty seconds with a rise in temperature
	Focusing judgment result		1Byte	0: No information 1: Not focused 2: Focused
	AF driving enabled status		1Byte	0: AF driving disabled 1: AF driving enable
	Reserve		2Byte	
	Vertual horizon information	Rolling	4Byte	*2
		Pitching	4Byte	Fixed to 0 for D7100
		Yawing	4Byte	Fixed to 0 for D7100
	Remaining time of movie recording		4Byte	From 0 to 1200000 [msec] * It is valid during the movie recording state.
	Movie recording information		1Byte	0: During LV execution 1: During movie recording
	AF mode status of the face detection system		1Byte	0: The face detection system is not set to AF. 1: The face detection system is set to AF.
	The number of persons whose faces are detected by the system		1Byte	From 0 to 35 (Thirty-five is the maximum number of persons for D7100)
	AF area index		1Byte	From 0 to 34

					(fixed to 0 for D7100)
	0 ～ 34	AF frame size	Horizonal size	2Byte	Area of the AF frame size and the AF frame center coordinates for thirty-five persons (4 Byte + 4 Byte) x 35 persons; 280 Byte in total
			Vertical size	2Byte	
		AF frame center coordinates	Horizonal position	2Byte	
			Vertical position	2Byte	
	Sound level (peak)		L	1Byte	0～14
			R	1Byte	0～14
	Sound level(current value)		L	1Byte	0～14
			R	1Byte	0～14
	Reserve			1Byte	
	Reserve			1Byte	
	Reserve			1Byte	
	SpotWB status			1Byte	0: OFF 1: Waiting(Not acquired) 2: During acquisition operation 3: OFF(Acquisition success) 4: Waiting(Acquisition failure)
	Reserve			24Byte	
Live view image	Image data				

*2: For more information on Vertual horizon information, see Capability_AngleLevel.

Described below,

"AF mode status of the face detection system" is "1: The face detection system is set to AF"

No	Content
1	Even if "The number of persons whose faces are detected by the system" is 0, "AF mode status of the face detection system" set to "1: The face detection system is set to AF".
2	From the point at which the camera is focused, a value other than "0: No information" is set for 1 second, to "Focusing judgment result".
3	The values of the area in the table are marked “*1”is not secured, because "AF frame center coordinates" and "AF frame size" for "the face detection system" will be used. But, when "The number of persons whose faces are detected by the system" is 0, AF is fixed to the center AF wide, and the values of the area in the table are marked “*1”is secured.

3.150. GetVideoImage

This will get Movie image.

Capability kNkMAIDCapability_GetVideoImage

Object types Video

ulType kNkMAIDCapType_Generic

ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray

Data pointer to NkMAIDGetVideoImage structure

```
typedef struct tagNkMAIDGetVideoImage
{
    ULONG   ulType;------one of eNkMAIDArrayType
    ULONG   ulOffset;-----Offset position that begins data acquisition
    ULONG   ulReadSize;-----Size of acquired data
    ULONG   ulDataSize;-----Size of buffer set to “pData”
    LPVOID   pData;---------Pointer to buffer
} NkMAIDGetVideoImage, FAR* LPNkMAIDGetVideoImage;
```

The client will get the size of Movie image by kNkMAIDCapOperation_Get, and get an actual Movie data by kNkMAIDCapOperation_GetArray.

While Movie data getting, camera is automatically locked state, and the operation of the camera body is impossible.

"While Movie data getting" means:It is the period from the first issued kNkMAIDCapOperation_GetArray, until canceled or until the completion of the movie data get.

[In case of Get]

The data size for the unacquisition is set to kNkMAIDGetVideoImage.ulDataSize.

[In case of GetArray]

When the client want to get Movie image with kNkMAIDCapOperation_GetArray, the client must allocate the buffer for size to be acquired, and set buffer to kNkMAIDGetVideoImage. pData, and set allocate size to kNkMAIDGetVideoImage.ulElements, and set offset position to kNkMAIDGetVideoImage.ulOffset.

After reading, the size of data actually read will be set to kNkMAIDGetVideoImage.ulReadSize and the Movie image will be set to kNkMAIDGetVideoImage.pData.

It is necessary to set “kNkMAIDArrayType_Unsigned” to kNkMAIDGetVideoImage.ulType. When the value that exceeds the size of actual movie data is set, module returns kNkMAIDResult_ValueOutOfBounds.

[Get Cancellation]

To cancel Get Movie data, call kNkMAIDCapOperation_GetArray set to 0 to ulDataSize.

In the following cases, Get Movie data will be canceled automatically by the camera.

- When the interval is issued kNkMAIDCapOperation_GetArray exceeds about 2 seconds.
- When during “While Movie data getting” do the following:
    1. Called the Capability other than GetVideoImage.

2. Inserting or Removing the card.

3.151. LockCamera

This will lock camera. When the camera is locked, user can't operate it directly.

Capability	kNkMAIDCapability_LockCamera
Object types	Source
ulType	kNkMAIDCapType_Boolean
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set
	kNkMAIDCapOperation_GetDefault
Data	True: Lock False: Unlock

When Capability_LiveViewStatus is ON(1), the ulOperations cannot be set into.

3.152. CameraType

This will get the camera type.

Capability	kNkMAIDCapability_CameraType
Object types	Source
ulType	kNkMAIDCapType_Unsigned
ulOperations	kNkMAIDCapOperation_Get
Data	one of eNkMAIDCameraType
	0x35: D7100

3.153. LensType

This will get the lens type about CPU lens.

Capability	kNkMAIDCapability_LensType
Object types	Source
ulType	kNkMAIDCapType_Unsigned
ulOperations	kNkMAIDCapOperation_Get
Data	one of eNkMAIDLensType
	0x00000001: D type
	0x00000010: G type
	0x00000100: VR
	0x00001000: DX
	0x00100000: Auto distortion control

The value of this capability is expressed by the OR value.

When CPU lens is not attached, the module returns 0

3.154. AFMode

This will set the focus mode for phase detection on still image shooting.

Capability kNkMAIDCapability_AFMode

Object types Source

ulType kNkMAIDCapType_Unsigned

ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetDefault
kNkMAIDCapOperation_Set

Data one of eNkMAIDAFMode
0: AF-S
1: AF-C
2: AF-A
3: MF Fixed
4: MF selected

This capability is affected by setting of Capability_FocusMode on still image shooting, Capability_LensType, Capability_LockCamera.

When there is a change in the types of values that can be set in this Capability, the module sends to the client kMAIDEvent_CapChange.

The following cases, the ulOperations cannot be set into..

- Capability_AFMode is MF Fixed(3).
- CPU lens is not attached.
- The Capability_LiveViewStatus is 1 (ON).
- The Capability_LockCamera is Fale, and the Capability_ExposureMode is “Miniature”, “Color sketch” or “Selective color” of Special Effects Modes(Because it is fixed to "2: AF-A".).

Conditions	LockCamera	ExposureMode	AFMode
CPU lens is not attached.			MF Fixed
CPU lens is attached+MF setting			MF Fixed
CPU lens is attached+AF setting	ON	“Miniature”, “Color sketch” or “Selective color” of Special Effects Modes	AF-A, MF selected
		Other than those above	AF-S, AF-C, AF-A, MF selected
	OFF	“Miniature”, “Color sketch” or “Selective color” of Special Effects Modes	AF-A Fixed
		Other than those above	AF-S, AF-C, AF-A

When the value of Capability_FocusAreaMode is “3D-tracking” or “Dynamic(9/21/51points)”, if the value of this capability is set to AF-S(0), the value of Capability_FocusAreaMode is changed into “Single” automatically.

When the Capability_ExposureMode is “Miniature”, “Color sketch”or “Selective color”of Special Effects Modes, the ulOperations cannot be set into "0: AF-S" or "1: AF-C".

3.155. MovRecInCardStatus

This will start or stop movie recording and show status of movie recording.

Capability	kNkMAIDCapability_MovRecInCardStatus
Object types	Source
ulType	kNkMAIDCapType_Unsigned
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set, kNkMAIDCapOperation_GetDefault
Data	one of eNkMAIDMovRecInCardStatus 0: OFF 1: ON

When the client start movie recording in the card, the client must set the value of this capability to ON(1). And when the client stop movie recording in the card, the client must set the value of this capability to OFF(0).

In case of kNkMAIDCapOperation_Get, the value of this capability will show the current status of movie recording.

This capability is accepted only during Live view execution.

It is recommended to check the value of Capability_MovRecInCardProhibit before issuing this capability. If the Capability_MovRecInCardProhibit is a value other than 0, the client cannot start movie recording.

When the Capability_LiveViewStatus is set to OFF(0), movie recording is automatically stopped by the camera.

Taking a picture of the still picture is prohibited while movie recording.

When the Capability_SpotWBMode is 1 (ON), the ulOperations of this capability is set to invalid.

3.156. MovRecInCardProhibit

This will show the status of movie recording prohibition.

Capability kNkMAIDCapability_MovRecInCardProhibit

Object types Source

ulType kNkMAIDCapType_Unsigned

ulOperations kNkMAIDCapOperation_Get

Data one of eNkMAIDMovRecInCardProhibit

The movie recording prohibition is shown by the OR value of the following definition value. When 0 returns, the status is not movie recording prohibition.

Value	Prohibition condition
0x00002000	The Capability_LiveViewSelector is 0(live view photography)
0x00001000	During enlarged display of Live view
0x00000800	Card protected
0x00000400	During movie file recording
0x00000200	There is unrecorded image or movie data in the buffer.
0x00000008	No free area in the card
0x00000004	Card not formatted
0x00000002	Card error
0x00000001	No card inserted

This Capability becomes effective only while executing a live view.

When the Capability_LiveViewStatus is OFF(0), the value of this capability is not fixed. Even if a value has been entered, it is not guaranteed.

3.157. MovieReleaseButton

This will set the function assigned for shutter button during Movie Live View. (CSM menu g4)

Capability	kNkMAIDCapability_MovieReleaseButton
Object types	Source
ulType	kNkMAIDCapType_Enum kNkMAIDArrayType_Unsigned
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray, kNkMAIDCapOperation_Set
Data	one of eNkMAIDMovieReleaseButton 0: Take photos 1: Record movies

If any of the following, the ulOperations cannot be set into.

- During movie recording.
- The Capability_SpotWBMode is 1 (ON).

3.158. SaveMedia

This will set the recording media by shooting, shutter-release button or Capability_Capture or Capability_AFCapture, Capability_CaptureDustImage.

Capability	kNkMAIDCapability_SaveMedia
Object types	Source
ulType	kNkMAIDCapType_Unsigned
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set, kNkMAIDCapOperation_GetDefault
Data	one of eNkMAIDSaveMedia 0: Card 1: SDRAM 2: Card + SDRAM

If any of the following, the ulOperations cannot be set into.

- During movie recording.
- The Capability_SpotWBMode is 1 (ON).

3.159. BlinkingStatus

This will show the status of the display a shutter speed and an aperture of the camera.

Capability	kNkMAIDCapability_BlinkingStatus
Object types	Source
ulType	kNkMAIDCapType_Unsigned
ulOperations	kNkMAIDCapOperation_Get
Data	one of eNkMAIDBlinkStatus 0: Both a shutter speed and an aperture are displayed with normal status. 1: Only a shutter speed is displayed with blinking status. 2: Only an aperture is displayed with blinking status. 3: Both a shutter speed and an aperture are displayed with blinking status.

When this capability is changed, kNkMAIDEvent_CapChange is issued to the client.

3.160. ResetWBMode

This will reset the white balance adjustment of Capability_WBMode or Capability_LiveViewWBMode.

Capability	kNkMAIDCapability_ResetWBMode
Object types	Source
ulType	kNkMAIDCapType_Process
ulOperations	kNkMAIDCapOperation_Start
Data	none

By the execution of this Capability, Capability of the following will be reset.

- Capability_WBMode
- Capability_WBTuneAuto
- Capability_WBAutoType
- Capability_WBTuneIncandescent
- Capability_WBTuneFluorescent
- Capability_WBFluorescentType
- WB_TuneSunny
- WBTuneFlash
- WBTuneCloudy
- WBTuneShade

- WBTuneColorTemp
- WBColorAdjust

If any of the following, the ulOperations of this capability is set to invalid.

- During movie recording.
- The Capability_SpotWBMode is 1 (ON).

3.161. LiveViewSelector

This will select Live View Photography or Movie Live View.

Capability	kNkMAIDCapability_LiveViewSelector
Object types	Source
ulType	kNkMAIDCapType_Enum kNkMAIDArrayType_Unsigned
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray, kNkMAIDCapOperation_Set
Data	one of eNkMAIDLiveViewSelector 0: live view photography 1: movie live view

If any of the following, the ulOperations cannot be set into.

- The Capability_LockCamera is False.
- During movie recording.
- The Capability_SpotWBMode is 1 (ON).

3.162. MovieShutterSpeed

This will set the shutter speed during movie live view

Capability kNkMAIDCapability_MovieShutterSpeed

Object types Source

ulType kNkMAIDCapType_Enum
kNkMAIDArrayType_PackedString

ulOperations kNkMAIDCapOperation_Get,
kNkMAIDCapOperation_GetArray,
kNkMAIDCapOperation_Set

Data Strings of shutter time in second. (e.g.) ”1/30”, “1/40”, “1/50”

To be used for the exposure time of each frame of video files will be taken.

"Live view image" during Movie Live View is used for taken video files.

When shooting the still image during Live View, Capability_ShutterSpeed is used.

This capability can be set when Capability_LiveViewStatusis 1(ON) and Capability_LiveViewSelector is 1(movie live view).

When sequence error has occurred, the ulVisibility of this capability is set to invalid and the ulOperations cannot be set into and the current value is invalid. If the ulOperations is changed, the module sends to the client kMAIDEvent_CapChange.

The value range of this capability is changed by the setting of Capability_EVInterval, Capability_ExternalFlashStatus, Capability_ExternalFlashSort, Capability_MovieScreenSize.

The lowest shutter speed is changed by the setting of movie frame rate as follows.

If any of the following, the ulOperations cannot be set into.

- Not in Movie Live View.
- The Capability_ExposureMode is not “Manual”.
- The Capability_SpotWBMode is 1 (ON).

movie frame rate	Lowest shutter speed
60fps	1/60
50fps	1/50
30fps	1/30
25fps	1/25
24fps	1/25

3.163. MovieAperture

This will set the aperture during Movie Live View

Capability	kNkMAIDCapability_MovieAperture
Object types	Source
ulType	kNkMAIDCapType_Enum kNkMAIDArrayType_PackedString
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray, kNkMAIDCapOperation_Set
Data	String of F value. (e.g.) ”1.4”, “1.6”, “1.8”…

This capability can be set when Capability_LiveViewStatusis 1(ON) and Capability_LiveViewSelector is 1(movie live view).

When aperture is not set to minimum(FEE), this capability is read-only and the string of “FEE” is set.

When this capability is “FEE”, the module can’t execute capture-command.

When CPU lens is not attached, this capability returns aperture of Capability_F0Manual setting.

When CPU lens is not attached and the Capability_F0Manual is set to “N/A”, this capability is return “--”.

When sequence error has occurred, the value obtained in the "Get" is invalid.

3.164. MovieSensitivity

This will select the sensitivity for Movie Live View. (shooting menu)

Capability kNkMAIDCapability_MovieSensitivity

Object types Source

ulType kNkMAIDCapType_Enum
kNkMAIDArrayType_PackedString

ulOperations kNkMAIDCapOperation_Get,
kNkMAIDCapOperation_GetArray,
kNkMAIDCapOperation_Set

Data The value which can be set is changed by the setting of Capability_CameraType、Capability_SensitivityInterval.

Capability_SensitivityInterval	
1/3 step	1/2 step
100, 125, 160, 200, 250, 320, 400, 500, 640, 800, 1000, 1250, 1600, 2000, 2500, 3200, 4000,5000, 6400, Hi-0.3, Hi-0.7, Hi-1.0, Hi-2.0	100, 140, 200, 280, 400, 560, 800, 1100, 1600, 2200, 3200, 4500, 6400, Hi-0.5, Hi-1.0, Hi-2.0

If all of the following, the ulOperations can be set into.

- The Capability_ExposureMode is “Manual”.
- The Capability_LiveViewStatus is 1 (ON).
- The Capability_LiveViewSelector is “1: Movie Live View”.
- The Capability_SpotWBMode is 0 (OFF).

3.165. MovieExposureComp

This will set the exposure compensation for Movie Live View.

Capability	kNkMAIDCapability_MovieExposureComp
Object types	Source
ulType	kNkMAIDCapType_Range
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set
Data	-3 - +3EV（Default value: 0）

The module sets the step value same as the Capability_EVInterval.

When the Capability_EVInterval is changed, the module sends to the client kMAIDEvent_CapChange.

If any of the following, the ulOperations cannot be set into.

- Not in Movie Live View.
- The Capability_ExposureMode is Scene Modes or Special Effects Modes(except for “Night Vision”).
- The Capability_SpotWBMode is 1 (ON).

3.166. LiveViewImageSize

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

Capability	kNkMAIDCapability_LiveViewImageSize
Object types	Source
ulType	kNkMAIDCapType_Enum kNkMAIDArrayType_Unsigned
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray, kNkMAIDCapOperation_Set
Data	one of eNkMAIDLiveViewImageSize 1: QVGA 2: VGA

If any of the following, the ulOperations cannot be set into.

- During movie recording.
- The Capability_SpotWBMode is 1 (ON).

3.167. TerminateCapture

This capability will terminate bulb exposure shooting and record to SDRAM the image until stopped bulb.

Capability kNkMAIDCapability_TerminateCapture
Object types Source
ulType kNkMAIDCapType_Generic
ulOperations kNkMAIDCapOperation_Start
Data pointer to NkMAIDTerminateCapture structure

```
typedef struct tagNkMAIDTerminateCapture
{
  ULONG ulParameter1;---------- Set to 0
  ULONG ulParameter2;---------- Set to 0
} NkMAIDTerminateCapture, FAR* LPNkMAIDTerminateCapture;
```

Only when Exposure mode is set to "Manual" and ShutterSpeed is set to “Bulb”, Start can be performed.

3.168. SpotWBMode

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

Capability kNkMAIDCapability_SpotWBMode
Object types Source
ulType kNkMAIDCapType_Unsigned
ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set, kNkMAIDCapOperation_GetDefault
Data one of eNkMAIDSpotWBMode
0: OFF
1: ON

When set to 1 (ON) to start the state of waiting to acquire SpotWB, the value of this Capability set to 0 (OFF), then stop.
This capability can not get dynamically "ON / OFF", state of waiting to acquire SpotWB.
If acquired by Capability_GetLiveViewImage "SpotWB status" was "3: OFF (acquisition success)", "State of waiting to acquire SpotWB" will be released automatically by the camera this capability must be set to "0: OFF".
If any of the following, the ulOperations cannot be set into.

- The Capability_ExposureMode is Scene Modes or Special Effects Modes.
- The Capability_LiveViewStatus is 0 (OFF).
- During movie recording.
- The Capability_HDRMode is not 0 (OFF).
- The Capability_WBMode is not "Preset1-6", or the state protected Preset1-6 has been set.

- The Capability_LiveViewSelector is "1: Movie Live View", and the Capability_MovieReleaseButton is "1: Record movies".

3.169. SpotWBMeasure

This capability obtains SpotWB information.

Capability kNkMAIDCapability_SpotWBMeasure
Object types Source
ulType kNkMAIDCapType_Process
ulOperations kNkMAIDCapOperation_Start
Data なし

This capability acquires SpotWB information for coordinates specified by Capability_ChangeSpotWBArea.
"SpotWB information" result of the acquisition will be notified in "SpotWB status" to get in the Capability_GetLiveViewImage.
When "SpotWB status" is “Waiting(Acquisition failure)”,the client can obtain the WB information again.
Only when the Capability_SpotWBMode is 1 (ON), the ulOperations can be start.

3.170. SpotWBChangeArea

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

Capability kNkMAIDCapability_SpotWBChangeArea
Object types Source
ulType kNkMAIDCapType_Point
ulOperations kNkMAIDCapOperation_Set
Data struct NkMAIDPoint
{
SLONG x; Coordinates of X axis
SLONG y; Coordinates of Y axis
}

This capability set the focus point by using x and y of NkMAIDPoint structure.
The value range of x and y is defined by “total size” of “Display information” in Live view image.
(please refer NkMAIDCapability_GetLiveViewImage)
But the range that can be actually set becomes an area where subtracted the half of "size of the AF frame" length and width from "total size", respectively.
When the value that exceeds the range of x and y is set, the maximum or minimum value will be used as this value.
Only when the Capability_SpotWBMode is 1 (ON), the ulOperations can be set into.

3.171. SpotWBResultDispEnd

This capability releases the display of SpotWB result.

Capability kNkMAIDCapability_SpotWBResultDispEnd
Object types Source
ulType kNkMAIDCapType_Process
ulOperations kNkMAIDCapOperation_Start
Data なし

Only when the Capability_LiveViewStatus is 1 (ON), the ulOperations can be start.
By executing this capability, the value of the "SpotWB status", retrieved by GetLiveViewImage, is modified as follows.
3: OFF(Acquisition success) → 0: OFF, or
4: Waiting(Acquisition failure) → 1: Waiting(Not acquired)

3.172. AngleLevel

This capability represents Vertual horizon information of the camera.

Capability kNkMAIDCapability_AngleLevel
Object types Source
ulType kNkMAIDCapType_float
ulOperations kNkMAIDCapOperation_Get
Data Normal: 0.0° ～ 359. 9999847412109375°
Angle can not be measured: -1

The angle becomes 0.0 degree when the camera is horizontal, and increases when the camera is turned to an anti-clock surroundings in view of the photographer.
The range of the angle is from 0.0 degree to 359.9999847412109375 degrees.
It becomes 0.0 degree or more if it turns anti-clockwise from the state of 359.9999847412109375 degrees.
It becomes 359.9999847412109375 degrees or less if it turns clockwise from the state of 0.0 degree.
The event is not issued even if there is a change in angle information on the camera.
The module returns -1 when angle information cannot be acquired or there is no reliability in the angle.
When the numerical value that adds 0.5 to the real number value and cuts down the fraction part is a multiple of 0 or 90, it is judged it is the horizontal and vertical.

4. Standard Capabilities

4.1. AsyncRate

Capability kNkMAIDCapability_AsyncRate
Object types Module
ulType kNkMAIDArrayType_Unsigned
ulOperations kNkMAIDCapOperation_Get

4.2. ProgressProc

Capability kNkMAIDCapability_ProgressProc
Object types Source, Image, Thumbnail, Video
ulType kNkMAIDCapType_Callback
ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set

4.3. EventProc

Capability kNkMAIDCapability_EventProc
Object types Module, Source, Item, Image, Thumbnail, Video
ulType kNkMAIDCapType_Callback
ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set

4.4. DataProc

Capability kNkMAIDCapability_DataProc
Object types Image, Thumbnail
ulType kNkMAIDCapType_Callback
ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set

4.5. UIRequestProc

Capability kNkMAIDCapability_UIRequestProc
Object types Module
ulType kNkMAIDCapType_Callback
ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set

4.6. IsAlive

Capability kNkMAIDCapability_IsAlive
Object types Module, Source, Item, Image, Thumbnail, Video
ulType kNkMAIDCapType_Boolean
ulOperations kNkMAIDCapOperation_Get

4.7. Children

Capability kNkMAIDCapability_Children
Object types Module, Source
ulType kNkMAIDCapType_Enum
kNkMAIDArrayType_Unsigned
ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray

4.8. State

Capability kNkMAIDCapability_State

Not supported

4.9. Name

Capability kNkMAIDCapability_Name
Object types Module, Source, Item, Image, Thumbnail, Video
ulType kNkMAIDCapType_String
ulOperations kNkMAIDCapOperation_Get

The image saved on SDRAM is taken a picture on the mode Capability_SaveMedia is "1:SDRAM", the value of this capability about Item、Image、Thumbnail is "DSC_0000.xxx".

The image saved on SDRAM is taken a picture on the mode Capability_SaveMedia is "2:Card + SDRAM", the value of this capability about Item、Image、Thumbnail is "folder name¥file name.xxx". However, when the image doesn't exist the on the card (For the reasons card was not inserted), "DSC_0000.xxx" is used.

4.10. Description

Capability kNkMAIDCapability_Description

Not supported

4.11. Interface

Capability kNkMAIDCapability_Interface
Object types Source
ulType kNkMAIDCapType_String
ulOperations kNkMAIDCapOperation_Get

4.12. DataTypes

Capability kNkMAIDCapability_DataTypes
Object types Source, Item
ulType kNkMAIDCapType_Unsigned
ulOperations kNkMAIDCapOperation_Get

4.13. DateTime

Capability kNkMAIDCapability_DateTime

Object types Item

ulType kNkMAIDCapType_DateTime

ulOperations kNkMAIDCapOperation_Get

4.14. StoredBytes

Capability kNkMAIDCapability_StoredBytes

Object types Item, Image, Thumbnail, Video

ulType kNkMAIDCapType_Unsigned

ulOperations kNkMAIDCapOperation_Get

4.15. Eject

Capability kNkMAIDCapability_Eject

Not supported

4.16. Feed

Capability kNkMAIDCapability_Feed

Not supported

4.17. Capture

This will take a picture and save the image to specified media.

Capability kNkMAIDCapability_Capture

Object types Source

ulType kNkMAIDCapType_Process

ulOperations kNkMAIDCapOperation_Start

When the Capability_ShootingMode is Continuous(1), the number of shots set by the Capability_ContinuousShootingNum is taken on continuous shooting mode.

When main image is prepared, kNkMAIDEvent_AddChild is issued to source object.

If the client executes this capability while doing Live view, Live view will be stopped by camera, and the camera take a picture with AF position set on Live view without Auto focus.

The media saved an image is specified by Capability_SaveMedia. When there is not free space in specified media, this capability returns kMAIDResult_MediaFull. And this capability returns kNkMAIDResult_NoMedia when card is under being formatted or no card is inserted.

Bulb exposure shootng only can be executed when the Capability_LockCamera is true and the Capability_ExposureMode is “Manual” and ShutterSpeed is Bulb.

The bulb shooting is started by this capability and terminated by Capability_TerminateCapture.

If any of the following, the ulOperations of this capability is set to invalid.

- During Movie recording.
- The Capability_SpotWBMode is 1 (ON).
- The Capability_ShutterSpeed is Time.

4.18. Mode

Capability kNkMAIDCapability_Mode

Not supported

4.19. Acquire

Capability kNkMAIDCapability_Acquire

Object types Image, Thumbnail

ulType kNkMAIDCapType_Process

ulOperations kNkMAIDCapOperation_Start

When Object types are set to Thumbnail, this Capability may return kNkMAIDResult_NotSupported error.

When it detects the camera's internal image generation, the module starts reading the Image. Then, the module cache inside it.(Look-ahead processing)

Thumbnail obtaining and caching is not performed in the look-ahead processing.

When loading is complete Image, Inside the camera, the entire image data including a Thumbnail will be deleted.

Therefore, if after the completion of the process ahead, was executed this Capability for Thumbnail, this Capability is kNkMAIDResult_NotSupported error.

For reacquisition when the shooting took place at set "RAW + JPEG". If one image data can be transmitted is successfully carried out only image data of the other re-transmission.

4.20. Start

Capability kNkMAIDCapability_Start

Not supported

4.21. Length

Capability kNkMAIDCapability_Length

Not supported

4.22. SampleRate

Capability kNkMAIDCapability_SampleRate

Not supported

4.23. Stereo

Capability kNkMAIDCapability_Stereo

Not supported

4.24. Samples

Capability kNkMAIDCapability_Samples

Not supported

4.25. Filter

Capability kNkMAIDCapability_Filter

Not supported

4.26. Prescan

Capability kNkMAIDCapability_Prescan

Not supported

4.27. AutoFocus

This will execute phase detection AF.

Capability kNkMAIDCapability_AutoFocus

Object types Source

ulType kNkMAIDCapType_Process

ulOperations kNkMAIDCapOperation_Start

When Capability_FocusMode is MF, or a CPU lens is not attached, or Capability_LiveViewStatus is 1(ON), the ulVisibility and the ulOperations of this capability is invalid.

4.28. AutoFocusPt

Capability kNkMAIDCapability_AutoFocusPt

Not supported

4.29. Focus

Capability kNkMAIDCapability_Focus

Not supported

4.30. Coords

Capability kNkMAIDCapability_Coords

Not supported

4.31. Resolution

Capability kNkMAIDCapability_Resolution

Not supported

4.32. Preview

Capability kNkMAIDCapability_Preview

Not supported

4.33. Negative

Capability kNkMAIDCapability_Negative

Not supported

4.34. Bits

Capability kNkMAIDCapability_Bits

Not supported

4.35. Planar

Capability kNkMAIDCapability_Planar

Not supported

4.36. Lut

Capability kNkMAIDCapability_Lut

Not supported

4.37. Transparency

Capability kNkMAIDCapability_Transparency

Not supported

4.38. Threshold

Capability kNkMAIDCapability_Threshold

Not supported

4.39. Pixels

Capability kNkMAIDCapability_Pixels

Object types Image, Thumbnail, Video

ulType kNkMAIDCapType_Size

ulOperations kNkMAIDCapOperation_Get

4.40. ForceScan

Capability kNkMAIDCapability_ForceScan

Not supported

4.41. ForcePrescan

Capability kNkMAIDCapability_ForcePrescan

Not supported

4.42. ForceAutoFocus

Capability kNkMAIDCapability_ForceAutoFocus

Not supported

4.43. NegativeDefault

Capability kNkMAIDCapability_NegativeDefault

Not supported

4.44. Firmware

Capability kNkMAIDCapability_Firmware

Not supported

4.45. CommunicationLevel1

Capability kNkMAIDCapability_CommunicationLevel1

Not supported

4.46. CommunicationLevel2

Capability kNkMAIDCapability_CommunicationLevel2

Not supported

4.47. BatteryLevel

Capability kNkMAIDCapability_BatteryLevel

Object types Source

ulType kNkMAIDCapType_Integer

ulOperations kNkMAIDCapOperation_Get

Data

Data	Battery Indicator
100	5 / 5.
80	4 / 5.
60	3 / 5
40	2 / 5
20	1 / 5
1	1 / 5 (Flashing)

This will show the remain of battery by percent.

When the external power supply is used, this capability returns -1.

4.48. FreeBytes

Not supported

4.49. FreeItems

Not supported

4.50. Remove

Not supported

4.51. FlashMode

Capability kNkMAIDCapability_FlashMode

Object types Source

ulType kNkMAIDCapType_Enum
kNkMAIDArrayType_Unsigned

ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray,
kNkMAIDCapOperation_Set,

Data one of eNkMAIDFlashMode, eNkMAIDFlashModeDX2
0: FrontCurtain
1: Rear-curtain sync
2: Slow
3: Red-eye reduction
4: Slow sync with red-eye reduction
5: Slow rear-curtain sync
262 : Flash Off

Flash mode / ExposureMode / SceneMode	FrontCurtain	Slow	Rear-curtain sync (Slow rear-curtain sync on P,A)	Red-eye reduction	Slow sync with red-eye reduction	flash off
P, A	●,△	●,△	●,△	●,△	●,△	—
S, M	●,△	—	●,△	●,△	—	—
Auto Portrait (SCENE) Close up (SCENE) Child (SCENE) Party / Indoor (SCENE) Pet Portrait (SCENE) Color Sketch (EFFECTS)	●,△	—	—	●,△	—	●
Landscape (SCENE) Sports (SCENE) Night Landscape (SCENE) Beach / Snow (SCENE) Sunset (SCENE) Dusk/Dawn (SCENE) Candlelight (SCENE) Blossom (SCENE) Autumn Colors (SCENE) Silhouette (EFFECTS) High Key (EFFECTS) Low Key (EFFECTS) Miniature Effect EFFECTS)	△	—	—	△	—	●
Flash Off Selective Color (EFFECTS) Night Vision (EFFECTS)	—	—	—	—	—	●,△
Food (SCENE)	●,△	—	—	—	—	—
Night Portrait(SCENE)	—	●,△	—	—	●,△	●
U1 U2	*1	*1	*1	*1	*1	*1

●: When Internal speed light is active(=external speed light is not active), it is available.

△: When external speed light is active (=external speed light is attached and power on), it is available.

—: Not supported

*1: Changes in the configuration of which Shooting Modes is set to User Modes.

When the Capability_ExternalNewTypeFlashMode is (7) “Repeating flash” and Capability_ExposureMode is P, S, A, M, 1 “Rear-curtain sync” can not be set and 0 “FrontCurtain” will be set.

When the build-in flash and external flash are invalid, the ulVisibility of this capability is invalid and the ulOperations cannot be set to and the current value is invalid.

When the Capability_HDRMode is not OFF(0) or During Movie Live View, this capability is “262: Flash Off”.

When the Capability_InternalSplMode is “Repeating Flash” and the Capability_InternalFlashStatus is not “2:Close”, “Rear-curtain sync” can not be set and can not be enumerate.

If any of the following, the ulOperations cannot be set into.

- During Movie Live View.
- The Built-in flash is Ready(0), and the Capability_ExposureMode is Scene Modes(Landscape,Sports,Night Landscape,Beach / Snow,Sunset,Dusk/Dawn,Candlelight,Blossom,Autumn Colors), or EFFECTS(Silhouette,High Key,Low Key,Miniature Effect,Selective Color,Night Vision), or Flash Off.
- The Capability_HDRMode is not “0: OFF”.
- The Capability_SpotWBMode is 1 (ON).

4.52. ModuleType

Capability kNkMAIDCapability_ModuleType
Object types Module
ulType kNkMAIDCapType_Unsigned
ulOperations kNkMAIDCapOperation_Get

4.53. AcquireStreamStart

Capability kNkMAIDCapability_AcquireStreamStart

Not supported

4.54. AcquireStreamStop

Capability kNkMAIDCapability_AcquireStreamStop

Not supported

4.55. AcceptDiskAcquisition

Capability kNkMAIDCapability_AcceptDiskAcquisition
Object types Source
ulType kNkMAIDCapType_Generic
ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set

4.56. Version

Capability kNkMAIDCapability_Version
Object types Module
ulType kNkMAIDCapType_Unsigned
ulOperations kNkMAIDCapOperation_Get

4.57. FilmFormat

Capability kNkMAIDCapability_FilmFormat

Not supported

4.58. TotalBytes

Capability kNkMAIDCapability_TotalBytes

Not supported

5. Event

The client can't receive the event as follows while opening item object.

5.1. AddChild

This event will be issued when the child is added under an object.

Event kNkMAIDEvent_AddChild

Object types Module, Source, Item

Data parameter Added Child ID

When the added child is Item Object, Item ID will be set to the data parameter of call back function.

This event is issued only about the image preserved in SDRAM. The image preserved on the card is not issued.

5.2. RemoveChild

This event will be issued when the child is removed under an object.

Event kNkMAIDEvent_RemoveChild

Object types Module, Source, Item

Data parameter Removed Child ID

5.3. WarmingUp

Event kNkMAIDEvent_WarmingUp

Not supported

5.4. WarmedUp

Event kNkMAIDEvent_WarmedUp

Not supported

5.5. CapChange

This event will be issued when the information of Capability is changed.

Event kNkMAIDEvent_CapChange

Object types Module, Source, Item

Data parameter Capability ID

In the following cases, this event will be issued.

- When the content of structure "NkMAIDCapInfo" of capability was changed.
- When the array data of capability with the type of kNkMAIDCapType_Array was changed.

5.6. OrphanedChildren

Event kNkMAIDEvent_OrphanedChildren

Not supported

5.7. CapChangeValueOnly

This event will be issued when the current value of capability is changed.

Event kNkMAIDEvent_CapChangeValueOnly

Object types Module, Source, Item, Data

Data parameter Capability ID

This event will be issued when only the current value of capability is changed (the array data, ulVisibility, ulOperations is not changed).

5.8. CaptureComplete

This will be issued when the acquisition or deletion of all images of which it takes a picture is completed.

Event kNkMAIDEvent_CaptureComplete

Object types Source

Data parameter 1 : The all SDRAM images by Capture, AFCapture, CaptureDustImage are finished to read or deleted.
0: The all images by Capture, AFCapture, CaptureDustImage are finished to record in card.

It shows that the all images are finished to record in card or the all SDRAM images were finished to read or deleted.

This event is not issued in case of shooting by shutter-release button.

5.9. AddChildInCard

This event will be issued when the child is added in card.

Event kNkMAIDEvent_AddChildInCard

Object types Item

Data parameter Added Child ID

When the added child is Item Object, Item ID will be set to the data parameter of call back function.

This event is issued only about the movie data preserved on the card. The still image data preserved on the card is not issued.

5.10. RecordingInterrupted

This will be issued the factor of discontinue when the recording of movie was stopped with error occurring.

Event kNkMAIDEvent_RecordingInterrupted

Object types Source

Data parameter 1: Some error.
0: Low access speed card error.

6. Vendor Unique Results

6.1. ApertureFEE

The aperture is not set maximum F number.

Result kNkMAIDResult_ApertureFEE

Command Start

Capability Capture, AFCapture, PreCapture, CaptureDustImage

Explanation If the ExposureMode is set to Program or SpeedPriority and the aperture ring of the lens is not set to maximum F number, the camera cannot execute capture command.

Expected Action The client displays the message to set the aperture to maximum F number and is waiting for next command.

6.2. BufferNotReady

This is not used in the current module.

6.3. NormalTTL

The speedlight is set TTL mode.

Result kNkMAIDResult_NormalTTL

Command Start

Capability Capture

Explanation The camera cannot take a picture when an external speedlight is attached and it is set TTL(measuring through the lens) mode.

Expected Action The client displays the message that the camera cannot take a picture and is waiting for next command.

6.4. MediaFull

There are neither free spaces that can be recorded on the card nor a free space that can be recorded with built-in the camera SDRAM.

Result	kNkMAIDResult_MediaFull
Command	Start
Capability	Capture, AFCapture, CaptureDustImage
Explanation	There is no free space at the specified media, so the client can not take a picture.
Expected Action	The client displays the message that the camera cannot take a picture and is waiting for next command.

6.5. InvalidMedia

It shows that the client can not take a picture because recording media is broken.

Result	kNkMAIDResult_InvalidMedia
Command	Start
Capability	Capture, AFCapture, CaptureDustImage
Explanation	When Capability_SaveMedia is "Card" or "Card + SDRAM" it shows the client can not take a picture because the card is broken.
Expected Action	The client displays the message that the camera cannot take a picture and is waiting for next command.

6.6. EraseFailure

This is not used in the current module.

6.7. CameraNotFound

The module did not find a camera on the bus.

Result	kNkMAIDResult_CameraNotFound
Command	The commands need access to the camera. (most of the commands for the Source, the Item or the Data object.)
Explanation	The camera was disconnected. If the client sends Async command to the Module object at intervals, it can tell that the camera is reconnected by AddChild event.
Expected Action	The client displays the message that the camera was disconnected and is waiting for next command.

6.8. BatteryDontWork

The main battery in the camera is used up.

Result	kNkMAIDResult_BatteryDontWork
Command	Start
Capability	Capture, AFCapture, CaptureDustImage, PreCapture
Explanation	The camera cannot take a picture because of the battery.
Expected Action	The client displays the message that the camera cannot take a picture and suggests changing battery.

6.9. ShutterBulb

The exposure time is set to Bulb.

Result	kNkMAIDResult_ShutterBulb
Command	Start
Capability	Capture, AFCapture, CaptureDustImage
Explanation	The camera cannot execute capture command if the Capability_ShutterSpeedis set to bulb.
Expected Action	The client displays the message that the camera cannot take a picture and is waiting for next command.

6.10. OutOfFocus

Auto focus operation is failed.

Result	kNkMAIDResult_OutOfFocus
Command	Start
Capability	Capture, AutoFocus, AFCapture, CheckContrastAF
Explanation	When the Capability_FocusMode is AF-S(1) and auto focus operation is failed, the camera cannot take a picture. Then this error is returned for the start of Capability_Capture or Capability_AFCapture. In case of the Capability_AutoFocus and Capability_CheckContrastAF, this error will be returned when auto focus is failed.
Expected Action	The client displays the message that the camera is out of focus and is waiting for next command.

6.11. Protected

This is not used in the current module.

6.12. FileExists

This is not used in the current module.

6.13. SharingViolation

This is not used in the current module.

6.14. DataTransFailure

An error occurred while data transference.

Result	kNkMAIDResult_DataTransFailure
Command	Start, Async
Capability	Acquire
Explanation	If this error occurs while the client read an image from DRAM, it will lose the image.
Expected Action	The client aborts the data transference.

6.15. SessionFailure

The module cannot open source object because the camera cannot open more session.

Result	kNkMAIDResult_SessionFailure
Command	Open
Capability	-
Explanation	The camera can open 1 session. If the client tries to open more source object, the module returns this error.
Expected Action	The client displays an error message and is waiting for next command.

6.16. FileRemoved

This is not used in the current module.

6.17. BusReset

This command was aborted because bus-reset occurred.

Result	kNkMAIDResult_BusReset
Command	any command
Capability	any capability
Explanation	If bus-reset occurred, the command, which the module is executing, is aborted. Then the module returns this result for the command.
Expected Action	The client sends the command again.

6.18. NonCPULens

This is not used in the current module.

6.19. ReleaseButtonPressed

This is not used in the current module.

6.20. BatteryExhausted

This is not used in the current module.

6.21. CaptureFailure

The camera failed in measuring value for white balance preset data.

Result	kNkMAIDResult_CaptureFailure
Command	Start
Capability	PreCapture
Explanation	When it fails in white balance measurement(Capability_PreCapture), this error is returned.
Expected Action	The client displays the message to take a picture again and is waiting for next command.

6.22. InvalidString

This is not used in the current module.

6.23. NotInitialized

This is not used in the current module.

6.24. CaptureDisable

This is not used in the current module.

6.25. DeviceBusy

A camera did not receive a command.

Result	kNkMAIDResult_DeviceBusy
Command	any command
Capability	any capability
Explanation	Since a camera is in the state where the command is not receivable, when it is not able to perform, this error returns.
Expected Action	This command is sent again or a display of a user interface is returned to the state before command execution.

6.26. CaptureDustFailure

The camera failed in taking a dust off ref photo.

Result	kNkMAIDResult_CaptureDustFailure
Command	Start
Capability	CaptureDustImage
Explanation	When it fails in taking a dust off ref photo(Capability_CaptureDustImage), this error is returned.
Expected Action	Do nothing.

6.27. ICADown

Enumeration of device can not be done correctly because ICA does not work on Mac OS X.

Result	kNkMAIDResult_ICADown
Command	EnumChildren
Capability	Children
Explanation	This error is returned when enumeration of device can not be done correctly because ICA does not work. This error code is used only on Mac OS X.
Expected Action	The client aborts the command and capability of device search. The client displays the message that the camera must be powered off and client application needs to restart.

6.28. NotLiveView

Live view was automatically stopped by the factor of the camera. (include the case of that the live view time limit passed.)

Result	kNkMAIDResult_NotLiveView
Command	Start, Set
Capability	GetLiveViewImage
Explanation	When Live view was automatically stopped by the factor of the camera. (include the case of that the live view time limit passed.) this error is returned.
Expected Action	The client displays an error message and is waiting for next command.

6.29. MFDriveEnd

The focus position reached the end of focus area in manual focus.

Result	kNkMAIDResult_MFDriveEnd
Command	Set
Capability	MFDrive
Explanation	When the focus position reached the end of focus area by Capability_MFDrive, this error is returned.
Expected Action	The client displays an error message and is waiting for next command.

6.30. UnformattedMedia

It shows that the client can not take a picture because the card is unformatted.

Result	kNkMAIDResult_UnformattedMedia
Command	Start
Capability	Capture, AFCapture, CaptureDustImage
Explanation	When Capability_SaveMedia is "Card" or "Card + SDRAM" it shows the client can not take a picture because the card is unformatted.
Expected Action	The client displays the message that the camera cannot take a picture and is waiting for next command.

6.31. MediaReadOnly

It shows that the client can not take a picture because the card is protected.

Result	kNkMAIDResult_MediaReadOnly
Command	Start
Capability	Capture, AFCapture, CaptureDustImage
Explanation	When Capability_SaveMedia is "Card" or "Card + SDRAM" it shows the client can not take a picture because the card is protected.
Expected Action	The client displays the message that the camera cannot take a picture and is waiting for next command.

6.32. BulbReleaseBusy

It shows during bulb exposure shooting.

Result	kNkMAIDResult_BulbReleaseBusy
Command	Start,Set
Capability	Capture
Explanation	It shows during bulb exposure shooting
Expected Action	If bulb exposure shooting started by Capability_Capture, kNkMAIDResult_BulbReleaseBusy will be returned until bulb exposure shooting is terminated.

6.33. DuringUpdate

This is not used in the current module.

7. kNkMAIDDataObjType_Video

Capability for which data object type kNkMAIDDataObjType_Video can be used by this module applies to the content described in not the MAID3.1 rule but this document.

8. Capability table that can be setting during 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	○*	×	×