

Type0001 vender unique capabilities

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Nikon Corporation

1. Intoroduction

This document explains the vendor unique capabilities which are used by Type0001 module (Type0001.md3, Type0001 module.bundle).

Type0001 module can control D3, D300 camera.

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. Vendor Unique Capabilities

2.1. 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	If camera type is D3, this value is affected by Capability_CCDDDataMode, Capability_AutoDXCrop. The under line shows default value.

[D3]

Capability_AutoDXCrop	OFF		
Capability_CCDDDataMode	FX format (3)	DX format (4)	5:4 (5)
L	<u>L(4256*2832)</u>	<u>L(2784*1848)</u>	<u>L(3552*2832)</u>
M	M(3184*2120)	M(2080*1384)	M(2656*2120)
S	S(2128*1416)	S(1392*920)	S(1776*1416)

Capability_AutoDXCrop	ON			
Lens type	DX lens	non-DX lens		
Capability_CCDDDataMode		FX format (3)	DX format (4)	5:4 (5)
L	<u>L(2784*1848)</u>	<u>L(4256*2832)</u>	<u>L(2784*1848)</u>	<u>L(3552*2832)</u>
M	M(2080*1384)	M(3184*2120)	M(2080*1384)	M(2656*2120)
S	S(1392*920)	S(2128*1416)	S(1392*920)	S(1776*1416)

[D300]

L	<u>L(4288*2848)</u>
M	M(3216*2136)
S	S(2144*1424)

When D3 camera is connected, enumeration value is changed by Capability_CCDDDataMode setting. But, when the DX lens is attached and Capability_AutoDXCrop is true, this value is set to DX format automatically regardless of Capability_CCDDDataMode setting. When Capability_AutoDXCrop is true, but non-DX lens is attached, this value is affected by Capability_CCDDDataMode.

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

2.2. 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, <u>JPEG Normal</u> , JPEG Fine, TIFF-RGB, RAW, RAW + JPEG Basic, RAW + JPEG Normal, RAW + JPEG Fine (Default: JPEG Normal)

2.3. 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, Color Temperature (Default: Auto)

2.4. 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 is affected by the setting of Capability_CameraType, Capability_SensitivityInterval as bellows. The under line shows default value.

	Capability_SensitivityInterval		
CameraType	1/3 step	1/2 step	1 step
D3	LO-1, LO-0.7,LO-0.3, <u>200</u> , 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	LO-1, LO-0.5, <u>200</u> , 280, 400, 560 800, 1100, 1600, 2200, 3200, 4500, 6400, Hi-0.5, Hi-1.0, Hi-2.0	LO-1, <u>200</u> , 400, 800, 1600, 3200, 6400, Hi-1.0, Hi-2.0
D300	LO-1, LO-0.7, LO-0.3, <u>200</u> , 250, 320, 400, 500, 640, 800, 1000, 1250, 1600, 2000, 2500, 3200, Hi-0.3, Hi-0.7, Hi-1.0	LO-1, LO-0.5, <u>200</u> , 280, 400, 560 800, 1100, 1600, 2200, 3200, Hi-0.5, Hi-1.0	LO-1, <u>200</u> , 400, 800, 1600, 3200, Hi-1.0

2.5. MenuBank

This will choose a bank from Shooting Menu. (shooting menu)

Capability	kNkMAIDCapability_MenuBank
Object types	Source
ulType	kNkMAIDCapType_Enum kNkMAIDArrayType_PackedString
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray, kNkMAIDCapOperation_Set
Data	A, B, C, D (Default: A)

2.6. ShootingBankName

This will set the name of shooting menu bank. (shooting menu)

Capability	kNkMAIDCapability_ShootingBankName
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 shooting menu bank to “NkMAIDArray.pData” in order of A-D.

If the client set string longer than 20 bytes, the module uses only 20 bytes from the head. The character which can be included in the string is only an ASCII character. When the other character is set, the module returns an error(kNkMAIDResult_ValueOutOfBounds).

2.7. ResetMenuBank

This will reset the custom settings which is selected by Capability_MenuBank. (shooting menu)

Capability	kNkMAIDCapability_ResetMenuBank
Object types	Source
ulType	kNkMAIDCapType_Process
ulOperations	kNkMAIDCapOperation_Start
Data	None

2.8. CompressRAWEx

This will set whether raw images are compressed. (shooting menu)

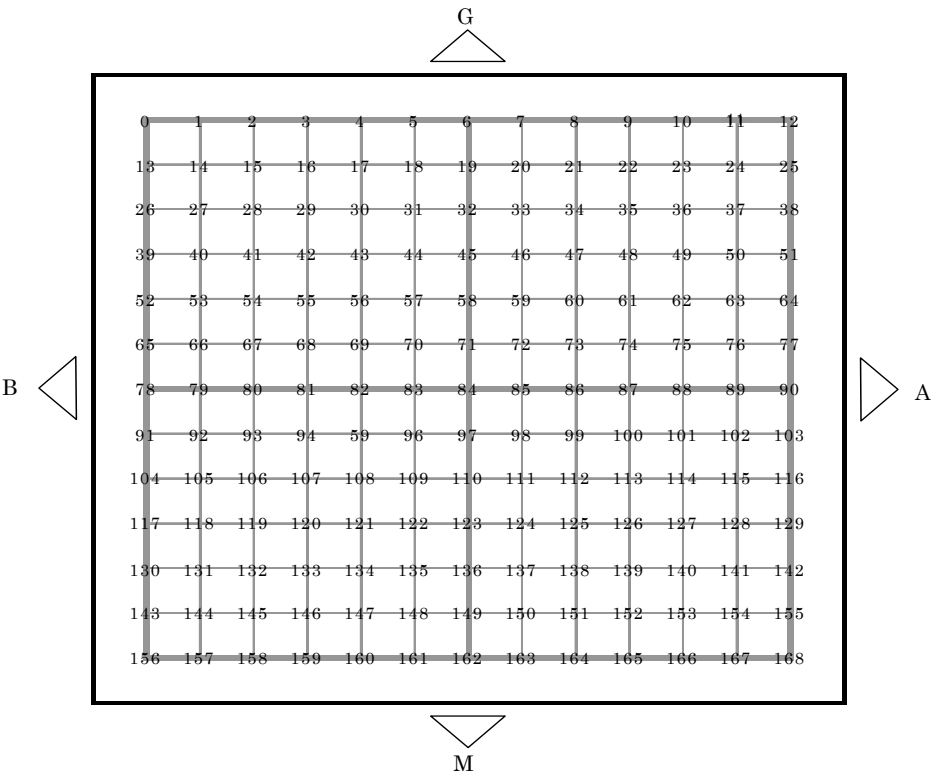
Capability	kNkMAIDCapability_CompressRAWEx
Object types	Source
ulType	kNkMAIDCapType_Unsigned
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set, kNkMAIDCapOperation_GetDefault
Data	one of eNkMAIDCompressRAWEx 0 : Uncompressed 1 : Compressed 2 : Lossless compressed (Default: 2 : Lossless compressed)

2.9. WB TuneAuto

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, as shown in following figure.



2.10. 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.

2.11. 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 (Default : 3 : Cool-white fluorescent)

2.12. 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.

2.13. WB Tune Sunny

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 while balance adjustment value and the coordinates is the same as the figure of Capability_WBTuneAuto.

2.14. WB Tune Flash

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 while balance adjustment value and the coordinates is the same as the figure of Capability_WBTuneAuto.

2.15. WB Tune Shade

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 while balance adjustment value and the coordinates is the same as the figure of Capability_WBTuneAuto.

2.16. WB Tune Cloudy

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 while balance adjustment value and the coordinates is the same as the figure of Capability_WBTuneAuto.

2.17. WB Tune Color Temp

This will set the color temperature 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 eNkMAIDWB Tune Color Temp (Default: 5000K)

Index	eNkMAIDWB Tune Color Temp	Index	eNkMAIDWB Tune Color Temp
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		

2.18. WB Tune Color Temp Adjust

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)

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

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

2.19. WB TunePreset1

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 while balance adjustment value and the coordinates is the same as the figure of Capability_WBTuneAuto.

2.20. WB TunePreset2

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 while balance adjustment value and the coordinates is the same as the figure of Capability_WBTuneAuto.

2.21. WB TunePreset3

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 while balance adjustment value and the coordinates is the same as the figure of Capability_WBTuneAuto.

2.22. WB TunePreset4

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 while balance adjustment value and the coordinates is the same as the figure of Capability_WBTuneAuto.

2.23. WB TunePreset5

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 while balance adjustment value and the coordinates is the same as the figure of Capability_WBTuneAuto.

2.24. WB PresetNumber

This will set the preset number referenced by the Capability_PreCapture, Capability_WB GainRed, Capability_WB GainBlue. (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 (Default: Preset 1)

2.25. 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 preset1-5.

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 character. When the other character is set, the module returns an error(kNkMAIDResult_ValueOutOfBounds).

2.26. WBPresetCodeData

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

Capability kNkMAIDCapability_WBPresetCodeData
Object types Source
ulType kNkMAIDCapType_Generic
ulOperations kNkMAIDCapOperation_Set
Data pointer to NkMAIDWBPresetCodeData structure
 typedef struct tagNkMAIDWBPresetCodeData
 {
 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.
 } NkMAIDWBPresetCodeData, FAR* LPNkMAIDWBPresetCodeData;

When the client sends kNkMAIDCapOperation_Set to the module, the client must to set all the member of “NkMAIDWBPresetCodeData” 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 “NkMAIDWBPresetCodeData” structure is used only for kNkMAIDCapOperation_Set.

The red gain value is set to the upper 2 byte, the blue gain value is set to the lower 2 byte 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 $0 \leq \text{gain value} < 8$ (0x0000 - 0x07FF).

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

- The image data is Jpeg.
- The size of image is 160 x 120.
- The quality of image is Fine(1/4 compressed).
- The size of image is below 13440 byte.
- The image can not include the tag except the following table.

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

2.27. 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)

2.28. 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)

2.29. CCDDataMode (D3 only)

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 3: FX format (36 x 24) 4: DX format (24 x 16) 5: 5:4 (30 x 24) (Default: 3: FX format (36 x 24))

When Capability_AutoDXCrop is true and DX lens is attached, this capability will keep the current value though current setting will be changed to DX format internally.

This capability is used for D3 only.

2.30. AutoDXCrop (D3 only)

This will set auto DX crop. (Shooting menu)

Capability	kNkMAIDCapability_AutoDXCrop
Object types	Source
ulType	kNkMAIDCapType_Boolean
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set, kNkMAIDCapOperation_GetDefault
Data	True: On False: Off (Default: True)

When this capability value is true and DX lens is attached, Capability_ImageSize will be set to DX format automatically regardless of Capability_CCDDataMode setting.

But, when this capability is true and DX lens is not attached, Capability_ImageSize is affected by Capability_CCDDataMode setting.

This capability is used for D3 only.

2.31. 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 (Default: 0: Size priority)

2.32. 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 (Default: 0 : sRGB)

2.33. 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 (Default: False)

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

2.34. 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 (Default: False)

2.35. 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) (Default: 1: ON(Normal))

2.36. Slot2ImageSaveMode (D3 only)

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 (Default: 0: Overflow)

This capability is used for D3 only.

2.37. 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 (Default: 0: 12-bit)

2.38. 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 101 - 104 : Option Picture Control 1 - 4 201 - 209 : Custom Picture Control 1 - 9 (Default: 1: Standard)

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 Option Picture Control and 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.

2.39. 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 Option or Custom Picture Control was saved.
- The Option or Custom Picture Control was deleted.
- The Option or Custom Picture Control was remained.

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.

[Color]

Field	Size (Byte)	Data
PicCtrlItem	1	type of Picture Control 1: Standatd 2: Neutral 3: Vivid 4: Monochrome 101 – 104 : 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 : Unsued 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 uPicCtrlItem 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
Brightness	1	Brightness -1 to +1
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 Castom Curb. [Header] 64 byte + [LUT] 257x 2 byte = 578 byte Refer to "LUT format" for details.

[Monochrome]

Field	Size (Byte)	Data
PicCtrlItem	1	type of Picture Control 1: Standatd 2: Neutral 3: Vivid 4: Monochrome 101 – 104 : 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 : Unsued 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
Brightness	1	Brightness -1 to +1
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 Castom Curb. [Header] 64 byte + [LUT] 257x 2 byte = 578 byte Refer to "LUT format" for details.

[LUT format]

LUT data is composed from LUT and LUT header. LUT is 514 byte 15 bit * 257 point, 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 have to set LUT header.

Byte	contents
0 - 63	Lut Header
64, 65	Data0
66, 67	Data1
...	
576, 577	Data256

[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	Spline Point1 (x, y)	0-255, 0-255
12, 13	Spline Point2 (x, y)	0-255, 0-255
...		
48, 49	Spline Point20 (x, y)	0-255, 0-255
50 - 64	Reserved	0

2.41. 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 (48byte 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_PictureControl.

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	SharpenningCapa	0x80 : selectable 0x01 : AUTO usable 0x81 : selectable & AUTO usable	Sharpenning 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 -2	Sharpening
0x18	1		-3 to +3		Contrast
0x19	1		-1 to +1		Brightness
0x1A	1		-3 to +3		Saturation
0x1B	1		-3 to +3		Hue
0x1C	1	DefaultLevel[1]	0 to 9	Quick Adjust -1	Sharpening
0x1D	1		-3 to +3		Contrast
0x1E	1		-1 to +1		Brightness
0x1F	1		-3 to +3		Saturation
0x20	1		-3 to +3		Hue
0x21	1	DefaultLevel[2]	0 to 9	Quick Adjust 0	Sharpening
0x22	1		-3 to +3		Contrast
0x23	1		-1 to +1		Brightness
0x24	1		-3 to +3		Saturation
0x25	1		-3 to +3		Hue
0x26	1	DefaultLevel[3]	0 to 9	Quick Adjust 1	Sharpening
0x27	1		-3 to +3		Contrast
0x28	1		-1 to +1		Brightness
0x29	1		-3 to +3		Saturation
0x2A	1		-3 to +3		Hue
0x2B	1	DefaultLevel[4]	0 to 9	Quick Adjust 2	Sharpening
0x2C	1		-3 to +3		Contrast
0x2D	1		-1 to +1		Brightness
0x2E	1		-3 to +3		Saturation
0x2F	1		-3 to +3		Hue

2.42. DeleteCustomPictureControl

This will delete Custom Picture Control. (Shooting menu)

Capability	kNkMAIDCapability_DeleteCustomPictureControl
Object types	Source
ulType	kNkMAIDCapType_Unsigned
ulOperations	kNkMAIDCapOperation_Set
Data	Cutom 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.

2.43. 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: (Default: 3: Off)

2.44. 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 The under line shows default value.

eNkMAIDISOAutoShutterTime	shutter speed
13	1/250
14	1/200
15	1/160
0	1/125
16	1/100
17	1/80
1	1/60
19	1/50
18	1/40
2	<u>1/30</u>
3	1/15
4	1/8
5	1/4
6	1/2
7	1

When the Capability_IsoControl is True and the Capability_ExposureMode is “Program mode” or “Aperture priority”, if it is under-expose with the shutter speed of this capability, ISO is controlled automatically to obtain optimum exposure.

2.45. 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 eNkMAIDISOAutoHiLimit 1: ISO400 2: ISO800 3: ISO1600 4: ISO3200 5: ISO6400 (for D3 only) 6: Hi-1 7: Hi-2 (for D3 only) (Default: [D3] 5: ISO6400 [D300] 4: ISO3200)

2.46. LiveViewMode

This will set Live view mode. (Shooting menu)

Capability	kNkMAIDCapability_LiveViewMode
Object types	Source
ulType	kNkMAIDCapType_Unsigned
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetDefault, kNkMAIDCapOperation_Set
Data	one of eNkMAIDLiveViewMode 0: Hand-held 1: Tripod (Default: 0: Hand-held)

The value if this capability can not be changed while Live view is executed.

2.47. LiveViewDriveMode

This will set the release mode for Live view. (Shooting menu)

Capability	kNkMAIDCapability_LiveViewDriveMode
Object types	Source
ulType	kNkMAIDCapType_Unsigned
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetDefault, kNkMAIDCapOperation_Set
Data	one of eNkMAIDLiveViewDriveMode 0: Single frame 1: Continuous low-speed 2: Continuous high-speed (Default: 0: Single frame)

2.48. CustomSettings

This will select custom settings. (CSM menu C)

Capability	kNkMAIDCapability_CustomSettings
Object types	Source
ulType	kNkMAIDCapType_Enum kNkMAIDArrayType_PackedString
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray, kNkMAIDCapOperation_Set
Data	A, B, C, D (Default: A)

2.49. CustomBankName

This will set the name of custom bank. (CSM menu C)

Capability	kNkMAIDCapability_CustomBankName
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 custom bank to "NkMAIDArray.pData" in order of A-D.

If the client set string longer than 20 bytes, the module uses 20 bytes from the head. The character which can be included in the string is only an ASCII character. When the other character is set, the module returns an error(kNkMAIDResult_ValueOutOfBounds).

2.50. ResetCustomSetting

This will reset the custom settings which is selected by Capability_CustomSettings.

(CSM menu R)

Capability	kNkMAIDCapability_ResetCustomSetting
Object types	Source
ulType	kNkMAIDCapType_Process
ulOperations	kNkMAIDCapOperation_Start
Data	None

2.51. AFcPriority

This will set the continuous AF area priority. (CSM menu a1)

Capability	kNkMAIDCapability_AFcPriority
Object types	Source
ulType	kNkMAIDCapType_Enum kNkMAIDArrayType_PackedString
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray, kNkMAIDCapOperation_Set
Data	The under line shows default value.

Focus	“AF-C Focus”
Release	<u>“AF-C Shutter”</u>
Release + focus	“AF-C Shutter/Focus”

2.52. 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	The under line shows default value.

Focus	<u>“AF-S Focus”</u>
Release	“AF-S Shutte”

2.53. DynamicAFArea

This will set dynamic AF area point. (CSM menu a3)

Capability	kNkMAIDCapability_DynamicAFArea
Object types	Source
ulType	kNkMAIDCapType_Unsigned
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetDefault, kNkMAIDCapOperation_Set
Data	one of eNkMAIDDynamicAFArea 0: 9 points 1: 21 points 2: 51 points 3: 51 points (3D –tracking) (Default: 0: 9 points)

2.54. AFLockOnEx

This will set whether AF lock or not. (CSM menu a4)

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 (Default: 1: Normal)

2.55. AFonRelease

This will select to activate AF or not when shutter button lightly pressed. (CSM menu a5)

Capability	kNkMAIDCapability_AFonRelease
Object types	Source
ulType	kNkMAIDCapType_Boolean
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set, kNkMAIDCapOperation_GetDefault
Data	True : Shutter/AF-ON False : AF-ON only (Default: True : Shutter/AF-ON)

2.56. FocusFrameInMf (D3 only)

This will set whether display or not focus frame in manual focus mode. (CSM menu a6)

Capability	kNkMAIDCapability_FocusFrameInMf
Object types	Source
ulType	kNkMAIDCapType_Boolean
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set, kNkMAIDCapOperation_GetDefault
Data	True: On False: Off (Default: True: On)

This capability is used for D3 only.

2.57. FocusFrameInContinuousShooting (D3 only)

This will set whether display or not focus frame in continuous shooting mode. (CSM menu a6)

Capability	kNkMAIDCapability_FocusFrameInContinuousShooting
Object types	Source
ulType	kNkMAIDCapType_Boolean
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set, kNkMAIDCapOperation_GetDefault
Data	True: On False: Off (Default: True: On)

This capability is used for D3 only.

2.58. FocusAreaLED (D300 only)

This will set how focus points are illuminated in the viewfinder. (CSM menu a6)

Capability	kNkMAIDCapability_FocusAreaLed
Object types	Source
ulType	kNkMAIDCapType_Enum kNkMAIDArrayType_PackedString
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray, kNkMAIDCapOperation_Set
Data	Auto, Off, On (Default: Auto)

This capability is used for D300 only.

2.59. AFAreaSelector

This will set that AF area selector motion is circular or not. (CSM menu a7)

Capability	kNkMAIDCapability_AFAreaSelector
Object types	Source
ulType	kNkMAIDCapType_Enum kNkMAIDArrayType_PackedString
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray, kNkMAIDCapOperation_Set
Data	The under line shows default value.

No wrap	<u>“Normal”</u>
Wrap	“Cyclic”

2.60. AFAreaPoint

This will set AF point selection. (CSM menu a8)

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 (Default 0: 51 points)

2.61. AFSubLight (D300 only)

This will set whether the built-in AF-assist illuminator lights or not. (CSM menu a9)

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

This capability is used for D300 only.

2.62. NormalAfButton (D3 only)

This will set the function when the AF-ON button pressed. (CSM menu a9)

Capability kNkMAIDCapability_NormalAfButton

Object types Source

ulType kNkMAIDCapType_Enum

kNkMAIDArrayType_PackedString

ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray,
kNkMAIDCapOperation_Set

Data The under line shows default value.

AF-ON	<u>“AF-ON”</u>
AE/AF lock	“AE-L/AF-L”
AE lock only	“AE Lock”
AE lock (Reset on release)	“AE Lock Reset by Release”
AE lock (Hold)	“AE Lock and Hold”
AF lock only	“AF-L”

This capability is used for D3 only.

2.63. VerticalAfButton

This will set the function when the vertical AF-ON button pressed. (CSM menu a10)

Capability kNkMAIDCapability_VerticalAfButton

Object types Source

ulType kNkMAIDCapType_Enum

kNkMAIDArrayType_PackedString

ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray,
kNkMAIDCapOperation_Set

Data The under line shows default value.

AF-ON	<u>“AF-ON”</u>
AE/AF lock	“AE-L/AF-L”
AE lock only	“AE Lock”
AE lock (Reset on release)	“AE Lock Reset by Release”
AE lock (Hold)	“AE Lock and Hold”
AF lock only	“AF-L”
Same as AF-ON	“Same as AF-ON”

2.64. 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	The under line shows default value.

1/3 step	<u>"1/3"</u>
1/2 step	"1/2"
1 step	"1"

2.65. EVInterval

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

Capability	kNkMAIDCapability_EVInterval
Object types	Source
ulType	kNkMAIDCapType_Enum kNkMAIDArrayType_PackedString
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray, kNkMAIDCapOperation_Set
Data	The under line shows default value.

1/3 step	<u>"1/3 Step"</u>
1/2 step	"1/2 Step"
1 step	"1 Step"

When this capability is changed, Capability_AEBracketingStep will be set to 1/ EV (3), and Capability_EnableBracketing is set to OFF (False).

2.66. ExpCompInterval

This will set the interval exposure compensation. (CSM menu b3)

Capability	kNkMAIDCapability_ExpCompInterval
Object types	Source
ulType	kNkMAIDCapType_Enum kNkMAIDArrayType_PackedString
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray, kNkMAIDCapOperation_Set
Data	The under line shows default value.

1/3 Step	<u>"1/3 Step"</u>
1/2 Step	"1/2 Step"
1 Step	"1 Step"

2.67. EasyExposureCompMode

This will set easy exposure compensation. (CSM menu b4)

Capability	kNkMAIDCapability_EasyExposureCompMode
Object types	Source
ulType	kNkMAIDCapType_Unsigned
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set, kNkMAIDCapOperation_GetDefault
Data	one of eNkMAIDEasyExposureCompMode 0: Off 1: On 2: On (Auto reset) (Default 0: Off)

2.68. CWMeteringDiameter

This will select the center weighted metering diameter. (CSM menu b5)

Capability	kNkMAIDCapability_CWMeteringDiameter
Object types	Source
ulType	kNkMAIDCapType_Enum kNkMAIDArrayType_PackedString
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray, kNkMAIDCapOperation_Set
Data	The under line shows default value.

[D3]

8mm	“8 mm”
12mm	“ <u>12mm</u> ”
15mm	“15mm”
20mm	“20mm”
Average	“Average”

[D300]

6mm	“6 mm”
8mm	“ <u>8mm</u> ”
10mm	“10mm”
13mm	“13mm”
Average	“Average”

2.69. ExpBaseMatrix

This will set the exposure base when the metering mode is matrix. (CSM menu b6)

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

2.70. ExpBaseCenter

This will set the exposure base when the metering mode is center weighted. (CSM menu b6)

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

2.71. ExpBaseSpot

This will set the exposure base when the metering mode is spot. (CSM menu b6)

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

2.72. AELockonRelease

This will set to activate AE Lock or not when shutter button lightly pressed. (CSM menu c1)

Capability	kNkMAIDCapability_AELockonRelease
Object types	Source
ulType	kNkMAIDCapType_Boolean
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set, kNkMAIDCapOperation_GetDefault
Data	True: On False: Off (Default False: Off)

2.73. AutoOffDelay

This will set time delay for auto meter switch-off. (CSM menu c2)

Capability	kNkMAIDCapability_AutoOffDelay
Object types	Source
ulType	kNkMAIDCapType_Enum kNkMAIDArrayType_PackedString
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray, kNkMAIDCapOperation_Set
Data	The under line shows default value.

4s	"4 seconds"
6s	<u>"6 seconds"</u>
8s	"8 seconds"
16s	"16 seconds"
30s	"30 seconds"
1min.	"1 minute"
5 min.	"5 minutes"
10 min.	"10 minutes"
30 min.	"30 minutes"
No limit	"Eternal"

This capability is not available when the camera works in PC mode.

2.74. SelfTimerDuration

This will set self-timer duration. (CSM menu c3)

Capability	kNkMAIDCapability_SelfTimerDuration
Object types	Source
ulType	kNkMAIDCapType_Enum kNkMAIDArrayType_PackedString
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray, kNkMAIDCapOperation_Set
Data	The under line shows default value.

2s	"2 seconds"
5s	"5 seconds"
10s	<u>"10 seconds"</u>
20s	"20 seconds"

This capability is not available when the camera works in PC mode.

2.75. LimitImageDisplay

This will select the limit time of image display. (CSM menu c4)

Capability	kNkMAIDCapability_LimitImageDisplay
Object types	Source
ulType	kNkMAIDCapType_Enum kNkMAIDArrayType_PackedString
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray, kNkMAIDCapOperation_Set
Data	The under line shows default value.

10 s	"10 seconds"
20 s	<u>"20 seconds"</u>
1min.	"1 minute"
5 min.	"5 minutes"
10 min.	"10 minutes"

This capability is not available when the camera works in PC mode.

2.76. BeepEx

This will set the pitch of the beep. (CSM menu d1)

Capability	kNkMAIDCapability_BeepEx
Object types	Source
ulType	kNkMAIDCapType_Unsigned
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set, kNkMAIDCapOperation_GetDefault
Data	one of eNkMAIDBeepEx 0: High 1: Low 2: Off (default: [D3] 2: Off [D300] 0: High)

2.77. ShootingSpeedHigh (D3 only)

This will set frame rate for continuous high-speed(CH). (CSM menu d2)

Capability	kNkMAIDCapability_ShootingSpeedHigh
Object types	Source
ulType	kNkMAIDCapType_Enum kNkMAIDArrayType_PackedString
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray, kNkMAIDCapOperation_Set
Data	The under line shows default value.

11 fps	"11 frames / second"
10 fps	"10 frames / second"
9 fps	<u>"9 frames / second"</u>

This capability is used for D3 only.

2.78. FinderMode (D300 only)

This will set whether grid is display or not. (CSM menu d2)

Capability	kNkMAIDCapability_FinderMode
Object types	Source
ulType	kNkMAIDCapType_Enum kNkMAIDArrayType_PackedString
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set, kNkMAIDCapOperation_GetArray
Data	Grid Off, Grid On (Default: Grid Off)

This capability is used for D300 only.

2.79. WarningDisp (D300 only)

This will set whether display or not warning icon in view finder. (CSM menu d3)

Capability	kNkMAIDCapability_WarningDisp
Object types	Source
ulType	kNkMAIDCapType_Unsigned
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set, kNkMAIDCapOperation_GetDefault
Data	one of eNkMAIDWarningDisp 0: On 1: Off (Default: 0: On)

This capability is used for D300 only.

2.80. ShootingSpeed

This will set the frame rate for continuous low-speed(CL). (CSM menu [D3] d2 [D300] d4)

Capability	kNkMAIDCapability_ShootingSpeed
Object types	Source
ulType	kNkMAIDCapType_Enum kNkMAIDArrayType_PackedString
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray, kNkMAIDCapOperation_Set

Data The under line shows default value.

9 fps (for D3 only)	“9 frames / second”
8 fps (for D3 only)	“8 frames / second”
7 fps	“7 frames / second”
6 fps	“6 frames / second”
5 fps (D3 default value)	“ <u>5 frames / second</u> ”
4 fps	“4 frames / second”
3 fps (D300 default value)	“ <u>3 frames / second</u> ”
2 fps	“2 frames / second”
1 fps	“1 frames / second”

2.81. ShootingLimit

This will set shooting limit number in continuous shooting. (CSM menu [D3] d3 [D300] d5)

Capability	kNkMAIDCapability_ShootingLimit
Object types	Source
ulType	kNkMAIDCapType_Range
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set
Data	[D3] 1 - 130 (Default: 130) [D300] 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.

2.82. NumberingMode

This will select a Numbering Mode. (CSM menu [D3] d4 [D300] d6)

Capability	kNkMAIDCapability_NumberingMode
Object types	Source
ulType	kNkMAIDCapType_Enum kNkMAIDArrayType_PackedString
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray, kNkMAIDCapOperation_Set
Data	The under line shows default value.

Off	“Normal filename assignment”
On	“ <u>Sequential filename assignment</u> ”

2.83. ResetFileNumber

This resets the number of the file which will be stored in CF card. (CSM menu d4)

Capability	kNkMAIDCapability_ResetFileNumber
Object types	Source
ulType	kNkMAIDCapType_Process
ulOperations	kNkMAIDCapOperation_Start
Data	None

2.84. RearPanelDisplayMode (D3 only)

This will set the information displayed on the rear panel. (CSM menu d5)

Capability	kNkMAIDCapability_RearPanelDisplayMode
Object types	Source
ulType	kNkMAIDCapType_Enum kNkMAIDArrayType_PackedString
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray, kNkMAIDCapOperation_Set
Data	The under line shows default value.

Exposure remaining	“Remain count”
ISO sensitivity	“ <u>Sensitivity</u> ”

This capability is used for D3 only.

2.85. ShootCounterInFinder (D3 only)

This will set what the viewfinder shows. (CSM menu d5)

Capability	kNkMAIDCapability_ShootCounterInFinder
Object types	Source
ulType	kNkMAIDCapType_Enum kNkMAIDArrayType_PackedString
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray, kNkMAIDCapOperation_Set
Data	The under line shows default value.

Frame count	“ <u>Shoot count</u> ”
Exposures remaining	“Remain count”

This capability is used for D3 only.

2.86. InfoDispSetting

This will select whether to use automatically white letters when the subject is dark.

(CSM menu [D3] d6 [D300] d7)

Capability	kNkMAIDCapability_InfoDispSetting
Object types	Source
ulType	kNkMAIDCapType_Unsigned
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set, kNkMAIDCapOperation_GetDefault
Data	one of eNkMAIDInfoDispSetting 0: Auto 1: Manual (Dark on light) 2: Manual (Light on dark) (Default 0: Auto)

2.87. LCDBackLight

This will set whether to use LCD illuminator or not when the each button is pressed.

(CSM menu [D3] d7 [D300] d8)

Capability	kNkMAIDCapability_LCDBackLight
Object types	Source
ulType	kNkMAIDCapType_Boolean
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set, kNkMAIDCapOperation_GetDefault
Data	True: On False: Off (Default: False: Off)

2.88. ExposureDelay

This will set exposure delay mode. (CSM menu [D3] d8 [D300] d9)

Capability	kNkMAIDCapability_ExposureDelay
Object types	Source
ulType	kNkMAIDCapType_Boolean
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set, kNkMAIDCapOperation_GetDefault
Data	True: On False: Off (Default: False: Off)

2.89. CellKind (D300 only)

This will specify the type of AA size battery when using MB-D10 battery pack. (CSM menu d10)

Capability	kNkMAIDCapability_CellKind
Object types	Source
ulType	kNkMAIDCapType_Unsigned
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set, kNkMAIDCapOperation_GetDefault
Data	one of eNkMAIDCellKind 0: AA alkaline 1: AA Ni-MH 2: AA lithium 3: AA Ni-Mn (Default: 0: AA alkaline)

This capability is used for D300 only.

2.90. CellKindPriority (D300 only)

This will select which battery are used first. (CSM menu d11)

Capability	kNkMAIDCapability_CellKindPriority
Object types	Source
ulType	kNkMAIDCapType_Unsigned
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set, kNkMAIDCapOperation_GetDefault
Data	one of eNkMAIDCellKindPriority 0: Use MB-D10 batteries first 1: Use camera battery first (Default: 0: Use MB-D10 batteries first)

This capability is used for D300 only.

2.91. 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	The under line shows default value.

1/320 s (Auto FP) (for D300 only)	"1/320 sec (FP Auto)"
1/250 s (Auto FP)	"1/250 sec (FP Auto)"
1/250 s	" <u>1/250 sec</u> "
1/200 s	"1/200 sec"
1/160 s	"1/160 sec"
1/125 s	"1/125 sec"
1/100 s	"1/100 sec"
1/80 s	"1/80 sec"
1/60 s	"1/60 sec"

2.92. 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 The under line shows default value.

1/60 s	<u>"1/60 sec"</u>
1/30 s	"1/30 sec"
1/15 s	"1/15 sec"
1/8 s	"1/8 sec"
1/4 s	"1/4 sec"
1/2 s	"1/2 sec"
1 s	"1 sec"
2 s	"2 sec"
4 s	"4 sec"
8 s	"8 sec"
15 s	"15 sec"
30 s	"30 sec"

2.93. InternalSplMode (D300 only)

This will set the flash mode for Built-in flash, or external speedlight which is new type, supporting communication, controllable by camera. (CSM menu e3)

Capability kNkMAIDCapability_InternalSplMode

Object types Source

ulType kNkMAIDCapType_Enum

kNkMAIDArrayType_PackedString

ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray, kNkMAIDCapOperation_Set

Data The under line shows default value.

TTL	<u>"TTL"</u>
Manual	"Manual"
Repeating flash	"Command"
Commander mode	"Repeating Flash"

When external speedlight which is new type, supporting communication, controllable by camera is attached, the value of this capability is limited to 2 items, "TTL" and "Manual".

This capability is used for D300 only.

2.94. InternalSplValue (D300 only)

This will set the flash power when flash mode is Manual for Built-in flash or external speedlight which is new type, supporting communication, controllable by camera. (CSM menu e3)

Capability kNkMAIDCapability_InternalSplValue

Object types Source

ulType kNkMAIDCapType_Unsigned

ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set,
kNkMAIDCapOperation_GetDefault

Data one of eNkMAIDInternalSplValue

eNkMAIDInternalSplValue	value	eNkMAIDInternalSplValue	value
0 (Default)	<u>Full</u>	15	1/13
8	1/1.3	4	1/16
9	1/1.7	16	1/20
1	1/2	17	1/25
10	1/2.5	5	1/32
11	1/3.2	18	1/40
2	1/4	19	1/50
12	1/5	6	1/64
13	1/6.4	20	1/80
3	1/8	21	1/100
14	1/10	7	1/128

This capability is used when Capability_InternalSplMode is "Manual"

This capability is used for D300 only.

2.95. InternalSplMRPTValue (D300 only)

This will set the flash power when Built-in flash mode is Repeating Flash. (CSM menu e3)

Capability kNkMAIDCapability_InternalSplMRPTValue

Object types Source

ulType kNkMAIDCapType_Unsigned

ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set,
kNkMAIDCapOperation_GetDefault

Data one of eNkMAIDInternalSplMRPTValue

0: 1/4

1: 1/8

2: 1/16

3: 1/32

4: 1/64

5: 1/128

(Default: 3: 1/32)

This capability is used when Capability_InternalSplMode is " Repeating Flash"

This capability is used for D300 only.

2.96. InternalSplMRPTCount (D300 only)

This will set the flash times when Built-in flash mode is Repeating Flash. (CSM menu e3)

Capability kNkMAIDCapability_InternalSplMRPTCount

Object types Source

ulType kNkMAIDCapType_Enum

kNkMAIDCapType_Unsigned

ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray

kNkMAIDCapOperation_Set,

Data one of eNkMAIDInternalSplMRPTCount

eNkMAIDInternalSplMRPTCount	Times	eNkMAIDInternalSplMRPTCount	Times
0	2	7	9
1	3	<u>8 (Default)</u>	10
2	4	9	15
3	5	10	20
4	6	11	25
5	7	12	30
6	8	13	35

The value of this capability is affected by the setting of Capability_InternalSplMRPTValue as the following table, but the contents of array data will not be changed.

Capability_InternalSplMRPTValue	Capability_InternalSplMRPTCount
0: 1/4	0
1: 1/8	0 - 3
2: 1/16	0 - 8
3: 1/32	0 - 9
4: 1/64	0 - 11
5: 1/128	0 - 13

This capability is used for D300 only.

2.97. InternalSplMRPTInterval (D300 only)

This will set the flash frequency when Built-in flash mode is Repeating Flash. (CSM menu e3)

Capability	kNkMAIDCapability_InternalSplMRPTInterval
Object types	Source
ulType	kNkMAIDCapType_Unsigned
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set, kNkMAIDCapOperation_GetDefault
Data	one of eNkMAIDInternalSplMRPTInterval

eNkMAIDInternalSplMRPTInterval	Frequency	eNkMAIDInternalSplMRPTInterval	Frequency
0	1	7	8
1	2	8	9
2	3	9 (Default)	10
3	4	10	20
4	5	11	30
5	6	12	40
6	7	13	50

This capability is used for D300 only.

2.98. InternalSplCommandChannel (D300 only)

This will set the channel when Built-in flash mode is Commander mode. (CSM menu e3)

Capability	kNkMAIDCapability_InternalSplCommandChannel
Object types	Source
ulType	kNkMAIDCapType_Unsigned
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set, kNkMAIDCapOperation_GetDefault
Data	one of eNkMAIDInternalSplCommandChannel

0 : 1 ch

1 : 2 ch

2 : 3 ch

3 : 4 ch

(Default: 0 : 1 ch)

This capability is used for D300 only.

2.99. InternalSplCmdSelfMode (D300 only)

This will set the Built-in flash mode when Built-in flash mode is Commander mode.

(CSM menu e3)

Capability	kNkMAIDCapability_InternalSplCmdSelfMode
Object types	Source
ulType	kNkMAIDCapType_Unsigned
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set kNkMAIDCapOperation_GetDefault
Data	one of eNkMAIDInternalSplCmdSelfMode 0: TTL 1: Manual 2: Off (Default: 0: TTL)

This capability is used for D300 only.

2.100. InternalSplCmdSelfComp (D300 only)

This will set the Built-in flash compensation when Built-in flash mode is Commander mode and Capability_InternalSplCmdSelfMode is “TTL”. (CSM menu e3)

Capability	kNkMAIDCapability_InternalSplCmdSelfComp
Object types	Source
ulType	kNkMAIDCapType_Unsigned
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set, kNkMAIDCapOperation_GetDefault
Data	one of eNkMAIDInternalSplCmdSelfComp

eNkMAIDInternalSplCmdSelfComp	Comp.
0	-3.0
1	-2.7
2	-2.3
3	-2.0
4	-1.7
5	-1.3
6	-1.0
7	-0.7
8	-0.3
9 (Default)	0
10	+0.3
11	+0.7
12	+1.0
13	+1.3
14	+1.7
15	+2.0
16	+2.3
17	+2.7
18	+3.0

This capability is used when Capability_InternalSplCmdSelfMode is ” TTL”.

This capability is used for D300 only.

2.101. InternalSplCmdSelfValue (D300 only)

This will set the Built-in flash compensation when Built-in flash mode is Commander mode and Capability_InternalSplCmdSelfMode is “Manual”. (CSM menu e3)

Capability kNkMAIDCapability_InternalSplCmdSelfValue
Object types Source
ulType kNkMAIDCapType_Unsigned
ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set,
kNkMAIDCapOperation_GetDefault
Data one of eNkMAIDInternalSplCmdSelfValue

eNkMAIDInternalSplCmdSelfValue	Comp.	eNkMAIDInternalSplCmdSelfValue	Comp.
0 (Default)	<u>1/1</u>	15	1/13
8	1/1.3	4	1/16
9	1/1.7	16	1/20
1	1/2	17	1/25
10	1/2.5	5	1/32
11	1/3.2	18	1/40
2	1/4	19	1/50
12	1/5	6	1/64
13	1/6.4	20	1/80
3	1/8	21	1/100
14	1/10	7	1/128

This capability is used when Capability_InternalSplCmdSelfMode is ” Manual”.

This capability is used for D300 only.

2.102. InternalSplCmdGroupAMode (D300 only)

This will set the flash mode of Group A when Built-in flash mode is Commander mode
(CSM menu e3)

Capability kNkMAIDCapability_InternalSplCmdGroupAMode
Object types Source
ulType kNkMAIDCapType_Unsigned
ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set,
kNkMAIDCapOperation_GetDefault
Data one of eNkMAIDInternalSplCmdGroupMode
0 : TTL
1 : AA
2 : Manual
3 : Off
(Default: 0 : TTL)

This capability is used for D300 only.

2.103. InternalSplCmdGroupAComp (D300 only)

This will set the flash compensation of Group A when Built-in flash mode is Commander mode and Capability_InternalSplCmdGroupAMode is “TTL” or “AA”. (CSM menu e3)

Capability kNkMAIDCapability_InternalSplCmdGroupAComp

Object types Source

ulType kNkMAIDCapType_Unsigned

ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set,
kNkMAIDCapOperation_GetDefault

Data one of eNkMAIDInternalSplCmdGroupComp

eNkMAIDInternalSplCmdComp	Comp.	eNkMAIDInternalSplCmdComp	Comp.
0	-3.0	10	+0.3
1	-2.7	11	+0.7
2	-2.3	12	+1.0
3	-2.0	13	+1.3
4	-1.7	14	+1.7
5	-1.3	15	+2.0
6	-1.0	16	+2.3
7	-0.7	17	+2.7
8	-0.3	18	+3.0
9 (Default)	0		

This capability is used when Capability_InternalSplCmdGroupAMode is ” TTL” or “AA”.

This capability is used for D300 only.

2.104. InternalSplCmdGroupAValue (D300 only)

This will set the flash power of Group A when Built-in flash mode is Commander mode and Capability_InternalSplCmdGroupAMode is "Manual" (CSM menu e3)

Capability kNkMAIDCapability_InternalSplCmdGroupAValue
Object types Source
ulType kNkMAIDCapType_Unsigned
ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set,
kNkMAIDCapOperation_GetDefault
Data one of eNkMAIDInternalSplCmdGroupValue

eNkMAIDInternalSplCmdGroupValue	Comp.	eNkMAIDInternalSplCmdGroupValue	Comp.
0 (Default)	<u>1/1</u>	15	1/13
8	1/1.3	4	1/16
9	1/1.7	16	1/20
1	1/2	17	1/25
10	1/2.5	5	1/32
11	1/3.2	18	1/40
2	1/4	19	1/50
12	1/5	6	1/64
13	1/6.4	20	1/80
3	1/8	21	1/100
14	1/10	7	1/128

This capability is used when Capability_InternalSplCmdGroupAMode is "Manual".

This capability is used for D300 only.

2.105. InternalSplCmdGroupBMode (D300 only)

This will set the flash mode of Group B when Built-in flash mode is Commander mode.
(CSM menu e3)

Capability kNkMAIDCapability_InternalSplCmdGroupBMode
Object types Source
ulType kNkMAIDCapType_Unsigned
ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set,
kNkMAIDCapOperation_GetDefault
Data one of eNkMAID InternalSplCmdGroupMode
0 : TTL
1 : AA
2 : Manual
3 : Off
(Default: 0 : TTL)

This capability is used for D300 only.

2.106. InternalSplCmdGroupBComp (D300 only)

This will set the flash compensation of Group B when Built-in flash mode is Commander mode and Capability_InternalSplCmdGroupBMode is “TTL” or “AA”. (CSM menu e3)

Capability	kNkMAIDCapability_InternalSplCmdGroupComp
Object types	Source
ulType	kNkMAIDCapType_Unsigned
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set, kNkMAIDCapOperation_GetDefault
Data	one of eNkMAIDInternalSplCmdGroupComp

eNkMAIDInternalSplCmdComp	Comp.	eNkMAIDInternalSplCmdComp	Comp.
0	-3.0	10	+0.3
1	-2.7	11	+0.7
2	-2.3	12	+1.0
3	-2.0	13	+1.3
4	-1.7	14	+1.7
5	-1.3	15	+2.0
6	-1.0	16	+2.3
7	-0.7	17	+2.7
8	-0.3	18	+3.0
9(Default)	0		

This capability is used when Capability_InternalSplCmdGroupBMode “TTL” or “AA”.

This capability is used for D300 only.

2.107. InternalSplCmdGroupBValue (D300 only)

This will set the flash power of Group B when Built-in flash mode is Commander mode and Capability_InternalSplCmdGroupBMode is “Manual”. (CSM menu e3)

Capability kNkMAIDCapability_InternalSplCmdGroupBValue
Object types Source
ulType kNkMAIDCapType_Unsigned
ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set,
kNkMAIDCapOperation_GetDefault
Data one of eNkMAIDInternalSplCmdGroupValue

eNkMAIDInternalSplCmdGroupValue	Comp.	eNkMAIDInternalSplCmdGroupValue	Comp.
0 (Default)	<u>1/1</u>	15	1/13
8	1/1.3	4	1/16
9	1/1.7	16	1/20
1	1/2	17	1/25
10	1/2.5	5	1/32
11	1/3.2	18	1/40
2	1/4	19	1/50
12	1/5	6	1/64
13	1/6.4	20	1/80
3	1/8	21	1/100
14	1/10	7	1/128

This capability is used when Capability_InternalSplCmdGroupBMode is ”Manual”.

This capability is used for D300 only.

2.108. ModelingOnPreviewButton

This will set whether modering flash activates or not in case of preview button is pressed.

(CSM menu [D3] e3 [D300] e4)

Capability kNkMAIDCapability_ModelingOnPreviewButton
Object types Source
ulType kNkMAIDCapType_Boolean
ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set,
kNkMAIDCapOperation_GetDefault
Data True: On False: Off (Default: True: On)

2.109. BracketingVary

This will select the bracketing variation. (CSM menu [D3] e4 [D300] e5)

Capability kNkMAIDCapability_BracketingVary

Object types Source

ulType kNkMAIDCapType_Enum

kNkMAIDArrayType_PackedString

ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray,
kNkMAIDCapOperation_Set

Data The under line shows default value.

AE only	“AE Only”
Flash only	“Flash Only”
AE & flash	“ <u>AE & Flash</u> ”
WB bracketing	“White Balance”

2.110. BracketingFactor

This will select the bracketing variation on manual mode. (CSM menu [D3] e5 [D300] e6)

Capability kNkMAIDCapability_BracketingFactor

Object types Source

ulType kNkMAIDCapType_Enum

kNkMAIDArrayType_PackedString

ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray,
kNkMAIDCapOperation_Set

Data The under line shows default value.

Flash/speed	“ <u>Exposure time + TTL control</u> ”
Flash/speed/aperture	“Exposure time + Aperture + TTL control”
Flash/aperture	“Aperture + TTL control”
Flash only	“TTL control”

2.111. BracketingOrder

This will select the bracketing order. (CSM menu [D3] e6 [D300] e7)

Capability kNkMAIDCapability_BracketingOrder

Object types Source

ulType kNkMAIDCapType_Enum
kNkMAIDArrayType_PackedString

ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray,
kNkMAIDCapOperation_Set

Data The under line shows default value.

MTR > under > over	<u>“Same as Auto Bracketing”</u>
Under > MTR > over	“Negative to Positive”

2.112. CenterButtonOnShooting

This will set the function to the center button of the multi selector on shooting. (CSM menu f1)

Capability kNkMAIDCapability_CenterButtonOnShooting

Object types Source

ulType kNkMAIDCapType_Enum
kNkMAIDArrayType_PackedString

ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray,
kNkMAIDCapOperation_Set

Data The under line shows default value.

Select center focus point	<u>“Reset to Center”</u>
Highlight active focus point (for D300 only)	“Display Selected Area”
Not used	“Not used”

2.113. CenterButtonOnPlayback

This will set function to the center buttin of the multi selector on playback mode. (CSM menu f1)

Capability kNkMAIDCapability_CenterButtonOnPlayback

Object types Source

ulType kNkMAIDCapType_Enum
kNkMAIDArrayType_PackedString

ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray,
kNkMAIDCapOperation_Set

Data The under line shows default value.

Thumbnail on/off	<u>“Thumbnail”</u>
View histograms	“Histogram”
Zoom on/off	“Zoom”
Choose folder (for D300 only)	“Choose folder”

2.114. ZoomRateOnPlayback

This will set the zoom rate when the Capability_CenterButtonOnPlayback is “Zoom”.

(CSM menu f1)

Capability	kNkMAIDCapability_ZoomRateOnPlayback
Object types	Source
ulType	kNkMAIDCapType_Enum kNkMAIDArrayType_PackedString
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray, kNkMAIDCapOperation_Set
Data	The under line shows default value.

Low magnification	<u>“2 x”</u>
Medium magnification	“3 x”
High magnification	“4 x”

2.115. MultiSelector

This will set what is activate when the multi selector pressed. (CSM menu f2)

Capability	kNkMAIDCapability_MultiSelector
Object types	Source
ulType	kNkMAIDCapType_Enum kNkMAIDArrayType_PackedString
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray, kNkMAIDCapOperation_Set
Data	The under line shows default value.

Do nothing	<u>“Don’t Start lightly pressed timer”</u>
Reset meter-off delay	“Start llightly pressed timer”

2.116. MultiSelectorDirection

This will exchange the role of the multi selector, up/down or right/left. (CSM menu f3)

Capability	kNkMAIDCapability_MultiSelectorDirection
Object types	Source
ulType	kNkMAIDCapType_Boolean
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set, kNkMAIDCapOperation_GetDefault
Data	True: exchange False: not exchange (Default: False)

2.117. SelectFUNC

This will set the function be assigned to FUNC. button. (CSM menu f4)

Capability kNkMAIDCapability_SelectFUNC

Object types Source

ulType kNkMAIDCapType_Enum

kNkMAIDArrayType_PackedString

ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray,
kNkMAIDCapOperation_Set

Data The under line shows default value.

None	<u>“None”</u>
Preview *	“Preview”
FV lock *	“FV Lock”
AE/AF lock	“AE Lock and AF Lock”
AE lock only	“AE Lock Only”
AE lock (Reset on release) *	“AE Lock and Hold Reset”
AE lock (Hold) *	“AE Lock and Hold”
AF lock only	“AF Lock only”
Flash off	“Disable SB flash”
Bracketing burst	“Auto Stop of BKT”
Matrix metering	“Metering Matrix”
Center-weighted	“Metering Center Weighted”
Spot metering	“Metering Spot”
Virtual horizon (for D300 only) *	“Virtual horizon”

When the client sets the function(* sign is attached) which can not be used with command dial function, the value of Capability_SelectFUNC2 will be changed to “None” automatically.

2.118. SelectFUNC2

This will set the function when a command dial is rotated while FUNC. button is pressed.

(CSM menu f4)

Capability kNkMAIDCapability_SelectFUNC2

Object types Source

ulType kNkMAIDCapType_Enum

kNkMAIDArrayType_PackedString

ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray,
kNkMAIDCapOperation_Set

Data The under line shows default value.

None	“None”
Cosse image area (for D3 only)	“ <u>Choose Image Area</u> ” (D3 default)
1 step spd/aperture	“Choose Exposure Time and Aperture by 1 EV”
Focus point-selection (for D3 only) *	“Focus Area Selection”
Auto bracketing (for D300 only)	“ <u>Auto bracketing</u> ” (D300 default)
Dynamic AF area (for D300 only) *	“Dynamic AF area”
Choose non-CPU lens number	“Choose non-CPU lens number”

When the client sets the function(* sign is attached) which can not be used with FUNC. button, the value of Capability_SelectFUNC will be changed to “None” automatically.

2.119. PreviewButton

This will set the function of preview button. (CSM menu f5)

Capability kNkMAIDCapability_PreviewButton

Object types Source

ulType kNkMAIDCapType_Enum

kNkMAIDArrayType_PackedString

ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray,
kNkMAIDCapOperation_Set

Data The under line shows default value.

None	“None”
Preview *	“ <u>Preview</u> ”
FV lock *	“FV Lock”
AE/AF lock	“AE Lock and AF Lock”
AE lock only	“AE Lock Only”
AE lock (Reset on release) *	“AE Lock and Hold Reset”
AE lock (Hold) *	“AE Lock and Hold”
AF lock only	“AF Lock only”
Flash off	“Disable SB flash”
Bracketing burst	“Auto Stop of BKT”
Matrix metering	“Metering Matrix”
Center-weighted	“Metering Center Weighted”
Spot metering	“Metering Spot”
Virtual horizon (for D3 only)*	“Virtual horizon”

When the client sets the function(* sign is attached) which can not be used with command dial, the value of Capability_PreviewButton2 will be changed to “None” automatically.

2.120. PreviewButton2

This will set the function when a command dial is rotated while preview button is pressed.

(CSM menu f5)

Capability kNkMAIDCapability_PreviewButton2

Object types Source

ulType kNkMAIDCapType_Enum

kNkMAIDArrayType_PackedString

ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray,
kNkMAIDCapOperation_Set

Data The under line shows default value.

None	<u>“None”</u>
Choose image area (for D3 only)	“Choose Image Area”
1 step spd/aperture	“Choose Exposure Time and Aperture by 1 EV”
Auto bracketing (for D300 only)	“Auto bracketing”
Dynamic AF area (for D300 only) *	“Dynamic AF area”
Choose non-CPU lens number	“Choose non-CPU lens number”

When the client sets the function(* sign is attached) which can not be used with preview button, the value of Capability_PreviewButton will be changed to “None” automatically.

2.121. AEAFLockButton

This will set the function of AE/AF lock button. (CSM menu f6)

Capability kNkMAIDCapability_AEAFLockButton

Object types Source

ulType kNkMAIDCapType_Enum

kNkMAIDArrayType_PackedString

ulOperations kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray,
kNkMAIDCapOperation_Set

Data The under line shows default value.

None	“None”
Preview *	“Preview”
FV lock *	“FV Lock”
AE/AF lock	“ <u>AE Lock and AF Lock</u> ”
AE lock only	“AE Lock Only”
AE lock (Reset on release) *	“AE Lock and Hold Reset”
AE lock (Hold) *	“AE Lock and Hold”
AF lock only	“AF Lock only”
Flash off	“Disable SB flash”
Bracketing burst	“Auto Stop of BKT”
Matrix metering	“Metering Matrix”
Center-weighted	“Metering Center Weighted”
Spot metering	“Metering Spot”
AF-ON *	“AF-ON”
Virtual horizon (for D3 only) *	“Virtual horizon”

When the client sets the function(* sign is attached) which can not be used with command dial function, the value of Capability_ AEAFLockButton2 will be changed to “None” automatically.

2.122. AEAFLockButton2

This will set the function when a command dial is rotated while AE/AF lock button is pressed.

(CSM menu f6)

Capability	kNkMAIDCapability_AEAFLockButton2
Object types	Source
ulType	kNkMAIDCapType_Enum kNkMAIDArrayType_PackedString
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray, kNkMAIDCapOperation_Set

Data The under line shows default value.

None	<u>“None”</u>
Choose image area (for D3 only)	“Choose Image Area”
Auto bracketing (for D300 only)	“Auto bracketing”
Dynamic AF area (for D300 only) *	“Dynamic AF area”
Choose non-CPU lens number	“Choose non-CPU lens number”

When the client sets the function(* sign is attached) which can not be used with AE/AF lock button, the value of Capability_AEAFLockButton will be changed to “None” automatically.

2.123. CommandDialDirection

This will set the direction of command dials. (CSM menu f7)

Capability	kNkMAIDCapability_CommandDialDirection
Object types	Source
ulType	kNkMAIDCapType_Boolean
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set, kNkMAIDCapOperation_GetDefault
Data	True: Normal False: Reverse (Default: True)

2.124. ExchangeDials

This will exchange functions for main and sub command dials. (CSM menu f7)

Capability	kNkMAIDCapability_ExchangeDials
Object types	Source
ulType	kNkMAIDCapType_Boolean
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set, kNkMAIDCapOperation_GetDefault
Data	True: exchange False: not exchange (Default: False)

2.125. ApertureDial

This will set whether to use sub-command dial to operate aperture. (CSM menu f7)

Capability	kNkMAIDCapability_ApertureDial
Object types	Source
ulType	kNkMAIDCapType_Boolean
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set kNkMAIDCapOperation_GetDefault
Data	True: use False: Not use (Default: True)

2.126. EnableCommandDialOnPlayback

This will set whether the command dials is used or not during playback or when menus are displayed. (CSM menu f7)

Capability	kNkMAIDCapability_EnableCommandDialOnPlayback
Object types	Source
ulType	kNkMAIDCapType_Boolean
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set, kNkMAIDCapOperation_GetDefault
Data	True: Enable False: Disable (Default: False)

2.127. UniversalMode

This will set the way of control on button. (CSM menu f8)

Capability	kNkMAIDCapability_UniversalMode
Object types	Source
ulType	kNkMAIDCapType_Boolean
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set, kNkMAIDCapOperation_GetDefault
Data	True: Universal Mode (Hold) False: Normal (Default: False)

2.128. ShootNoCard

This will set disable to shoot when a CF card is not install. (CSM menu f9)

Capability	kNkMAIDCapability_ShootNoCard
Object types	Source
ulType	kNkMAIDCapType_Boolean
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set kNkMAIDCapOperation_GetDefault
Data	True: Enable to shoot False: Disable (Default: True)

2.129. IndicatorDisplay

This will set the direction of the plus and the minus to the indicator display.

(CSM menu f10)

Capability	kNkMAIDCapability_IndicatorDisplay
Object types	Source
ulType	kNkMAIDCapType_Unsigned
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set, kNkMAIDCapOperation_GetDefault
Data	one of eNkMAIDIndicatorDisplay 0 : + 0 - 1 : - 0 + (Default 0 : + 0 -)

2.130. 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 character. When the other character is set, the module returns an error(kNkMAIDResult_ValueOutOfBounds).

2.131. 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 (Default: False)

2.132. 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 (Default: True)

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

2.133. 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

2.134. 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)

2.135. 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)

2.136. 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)

2.137. 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.) "Lo", ... "1", "1/1.3", "1/1.6", ... "Hi" "x 1/250", "x 1/200",

When the Capability_ExposureMode is set to "Program" or "Aperture Priority", this capability is 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.

When the Capability_ExposureMode is set to "Program" or "Aperture Priority", if the camera cannot set proper exposure time because a subject is too bright, the module points to "Hi". Similarly, if a subject is too dark and the Capability_InternalFlashStatus is "Close" and Capability_ExternalFlashStatus is "Not Exist", the module points to "Lo".

When the Capability_InternalFlashStatus is "Close" and Capability_ExternalFlashStatus is "Not Exist", the maximum shutter speed value is limited to the Capability_FlashSyncTime setting. The array data is changed. When the Capability_ExposureMode is set to "Program", "Aperture priority", the minimum shutter speed value is limited to the Capability_FlashSlowLimit setting. When the array data is changed, the module sends to the client kMAIDEvent_CapChange.

2.138. FlexibleProgram

This will set the Flexible program value.

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

The module set the step value 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 is set to read-only and the current value is invalid.

2.139. 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 eNkMAIDFocusPrefer2		
	0 - 51 (default 0)		

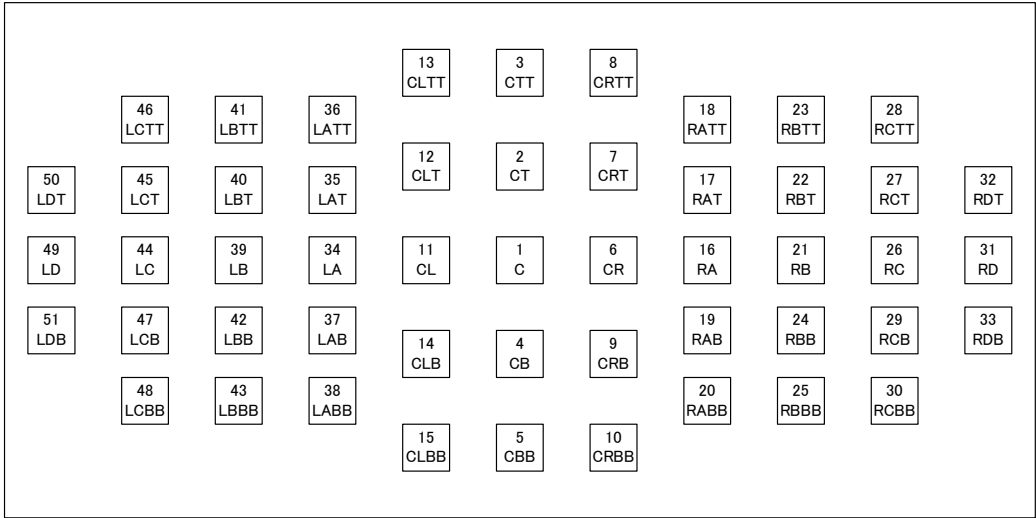
The value range of this capability is limited by the setting of Capability_AFAreaPoint.

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

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

This capability is valid only when Capability_FocusAreaMode is “Single” or “Dynamic”. And if Capability_LiveViewStatus is ON, this capability is valid when Capability_FocusAreaMode is “Single” or “Dynamic” and Capability_LiveViewMode is “Hand-held” (0).

The relationship between focus point and the value of this capability, as shown in following figure.



2.140. 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”, this capability is 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.

When the Capability_ExposureMode is set to “Speed Priority”, if the camera cannot set proper aperture value because a subject is too bright, the module points to “Hi”. Similarly, if a subject is too dark and the Capability_InternalFlashStatus is “Close” and Capability_ExternalFlashStatus is “Not Exist”, the module points to “Lo”.

2.141. MeteringMode

This will get the metering mode.

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

When the Capability_LockCamera is set to false or Capability_LockExposure is true, the ulOperations of this capability is read-only.

When Live view is executed, the change of this capability value is not applied, and the change is applied after Live view finished.

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

2.142. 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 (Default: 0: Program mode)

When CPU lens is not attached, the array data includes only Aperture priority and Manual.

When the array data is updated , the module sends kMAIDEvent_CapChange to the client.

2.143. ExposureComp

This will set the exposure compensation value.

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

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

2.144. 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: Single (S) 1: Cntinuous low-speed (CL) 2: Cntinuous high-speed (CH) 4: Mirror up (Default: 0: Single)

This capability can be set only when the Capability_LockCamera is true.

However, when the client changes the value of this capability while executing a live view, Live view will be stopped and shooting mode is set to that value.

If the shooting mode of the camera body is set to “Self-Timer” or “Live view”, but in PC mode, the camera works in Single mode(S) and the value of this capability is set to Single(0).

If the ulVisibility and ulOperations are changed, the module sends to the client kMAIDEvent_CapChange.

2.145. 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	[D3] 0 - 46 (Default: 1) [D300] 0 - 42 (Default: 1)

The client can't set a value that is bigger than Capability_ShootingLimit.

If the client set a value that is bigger than Capability_ShootingLimit, module does not return error but the value of this capability is set to the value same as Capability_ShootingLimit automatically.

However, when the value of Capability_ShootingLimit is changed smaller than this capability, this capability is not affected, and kept current value.

The actual number of shot that can be taken in a continuous shooting mode is the minimum value of the following capability, Capability_ShootingLimit, Capability_RemainContinuousShooting, and if bracketing active, Capability_BracketingType.

2.146. FocusAreaMode

This will select the AF area mode.

Capability	kNkMAIDCapability_FocusAreaMode
Object types	Source
ulType	kNkMAIDCapType_Enum kNkMAIDArrayType_PackedString
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray, kNkMAIDCapOperation_Set
Data	The under line shows default value.

Dynamic	“Dynamic”
Single	“ <u>Single</u> ”
Auto	“Auto”

This capability can be set only when Capability_LockCamera is true. and Capability_FocusMode is not MF(0).

When the Capability_FocusMode is MF(0), this capability is set to “Single” and the ulOperations is read-only.

When the ulOperation of this capability is changed, the module send to the client kMAIDEvent_CapChange.

2.147. 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 (Default: False)

When the Capability_BracketingVary is “WhiteBalance” and the Capability_CompressionLevel is ”RAW” , “RAW+JPEG(Basic)” ,“RAW+JPEG(Normal)”, “RAW+JPEG(Fine), the ulVisibility of this capability is set to invalid and ulOperations of this capability is set to read-only.

When the value of Capability_EVInterval is changed, the value of this capability is changed to False(OFF).

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

2.148. 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 eNkMAIDAEBacketingStep 0: 1/3EV 1: 1/2EV 2: 2/3EV 3: 1EV (Default: 0)

When the Capability_EnableBracketing is true and the Capability_BracketingVary is “AE Only”, “Flash Only”, “AE & Flash”, this capability is valid. The array data is affected by the Capability_EVInterval setting as following table.

If the ulVisibility and ulOperations are changed, the module sends to the client kMAIDEvent_CapChange.

Capability_EVInterval	Capability_AEBracketingStep
1/3 EV	1/3EV, 2/3EV , 1EV
1/2 EV	1/2EV, 1EV
1 EV	1EV

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

2.149. 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 (Default: 0)

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

If the ulVisibility and ulOperations are changed, the module sends to the client kMAIDEvent_CapChange.

2.150. BracketingType

This will select the combination bracketing shots and direction.

Capability	kNkMAIDCapability_BracketingType
Object types	Source
ulType	kNkMAIDCapType_Enum kNkMAIDArrayType_Unsigned
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray, kNkMAIDCapOperation_Set
Data	one of eNkMAIDBracketingType 0: Minus_2 1: Plus_2 2: Minus_3 3: Plus_3 4: Both_3 5: Both_5 6: Both_7 7: Both_9 (Default: 4)

This capability is valid when the value of Capability_EnableBracketing is ON(True).

When the Capability_EnableBracketing is OFF(false), the ulVisibility of this capability is invalid and the ulOperations is read-only and the current value is invalid.

If the ulVisibility and ulOperations are changed, the module sends to the client kMAIDEvent_CapChange.

2.151. 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 (Default: OFF)

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, Capability_LiveViewCapture, and Capability_LockCamera is prohibited while Live view is executing.

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

2.152. 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 AND value of the following definition value. When 0 returns, the status is not Live view prohibition.

value	prohibition condition
0x00000400	The setting by Aperture ring is valid.
0x00000200	TTL error
0x00000100	battery shortage
0x00000080	Mirror up
0x00000040	Shutter bulb
0x00000020	Aperture ring is not minimum.
0x00000010	All button pushed error.
0x00000004	Sequence error
0x00000001	Recording media is CF card

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.”(0x00000400) will be set.

When the CPU lens with aperture ring is attached and aperture ring is not minimum, regardless of Capability_ApertureDial setting, “Aperture ring is not minimum.”(0x00000020) will be set.

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

2.153. LiveViewImageZoomRate

This will set the zoom rate for Live view image.

Capability	kNkMAIDCapability_LiveViewImageZoomRate
Object types	Source
ulType	kNkMAIDCapType_Enum kNkMAIDCapType_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 % (Default: 0)

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

This capability is valid when the value of Capability_LiveViewStatus is ON(1), and when Capability_LiveViewStatus is not ON(1), the ulVisibility of this capability is set to read-only.

[D3]

When agreeing with the following condition, 25 %(1) can not be set.

- When the value of Capability_AutoDXCrop is True, and DX lens is attached.
- .When the value of Capability_CCDDDataMode is DX format(4).

[D300]

When the value of Capability_LiveViewMode is Hand-held(0), the value of this capability will be limited to 0 - 3.

2.154. 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 (UpDown) (Default: 0)

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

2.155. RemainContinuousShooting

This will get the number of shot that can be taken in current image quality on a continuous shooting mode.

Capability	kNkMAIDCapability_RemainContinuousShooting
Object types	Source
ulType	kNkMAIDCapType_Unsigned
ulOperations	kNkMAIDCapOperation_Get
Data	[D3] 0 - 46 [D300] 0 - 42

The value of this 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_JpegCompressionPolicy
- Capability_CompressRAWEx
- Capability_CompressRAWBitMode
- Capability_Active_D_Lighting
- Capability_NoiseReduction
- Capability_NoiseReductionHighISO
- Capability_ShootingLimit

If the current value is changed because of the above capability setting, the module sends to the client kMAIDEvent_CapChangeValueOnly.

2.156. 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

2.157. 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

2.158. 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

2.159. LockShutterSpeed

This will get lock status of shutter speed.

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

2.160. LockAperture

This will get lock status of aperture.

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

2.161. 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)

When the Capability_ExposureMode is set to “Program”, this capability returns exposure compensation. When the Capability_ExposureMode is set to “Manual” (without in case of ShutterSpeed is Bulb) returns the exposure value how under- or over-exposed at current settings.

When the Capability_ExposureMode is set to “Shutter priority” or “Aperture priority”, this capability returns exposure compensation in case of proper exposure, but returns the exposure value how under- or over-exposed at current settings in case of not proper exposure.

2.162. 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

2.163. 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 zero.

2.164. 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

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

2.165. BracketingCount

This will get the number of shots on AE bracketing.

Capability	kNkMAIDCapability_BracketingCount
Object types	Source
ulType	kNkMAIDCapType_Unsigned
ulOperations	kNkMAIDCapOperation_Get
Data	1 - 9

When the Capability_EnableBracketing is true and the Capability_BracketingVary is “AE Only” or ” Flash Only” or ” AE & Flash”, this capability is valid. If this capability is invalid, returns zero.

2.166. USBSpeed

This will get USB transfer speed on current conneted.

Capability	kNkMAIDCapability_USBSpeed
Object types	Source
ulType	kNkMAIDCapType_Enum kNkMAIDArrayType_Unsigned
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray,
Data	one of eNkMAIDUSBSpeed 0: Full Speed 1: High Speed

2.167. InternalFlashStatus (D300 only)

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

This capability is used for D300 only.

2.168. InternalFlashComp (D300 only)

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 to +1 (Default:0)

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

When the Capability_InternalFlashStatus is “Close” and Capability_ExternalFlashStatus is “Not Exist”, this capability is set to read-only.

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).

This capability is used for D300 only.

2.169. 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

2.170. 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 - +3 EV (1/6EV step)

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

2.171. ExternalFlashSort

This will get the sort of external speedlight.

Capability	kNkMAIDCapability_ExternalFlashSort
Object types	Source
ulType	kNkMAIDCapType_Unsigned
ulOperations	kNkMAIDCapOperation_Get
Data	one of eNkMAIDExternalFlashSort

0: The external speedlight is not supporting communication.

1: The external speedlight is old type and supporting communication.

2: The external speedlight is new type and supporting communication.

4: The external speedlight is new type and supporting communication and controlled by camera.

3 : The external speedlight does not exist.

2.172. ExternalOldTypeFlashMode

This will get flash mode when the Capability_ExternalFlashSort is 1 (=The external speedlight is old type and supporting communication)

Capability	kNkMAIDCapability_ExternalOldTypeFlashMode
Object types	Source
ulType	kNkMAIDCapType_Enum kNkMAIDArrayType_Unsigned
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray,
Data	one of eNkMAIDExternalOldTypeFlashMode 0 : TTL(shutter-release button locked) 7 : non-TTL 6 : The external speedlight is old type and supporting communication does not exist.

2.173. ExternalNewTypeFlashMode

This will get flash mode when the Capability_ExternalFlashSort is 2 (=The external speedlight is new type and supporting communication) or 4 (=The external speedlight is new type and supporting communication and controlled by camera).

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 speedlight is new type and supporting communication does not exist.

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When Capability_ExternalFlashSort of the attached external flash is 4 (The external speedlight is new type and supporting communication and controlled by camera), the value of this capability is changed by Capability_InternalSplMode setting.

2.174. 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.

2.175. AFCapture

This will take a picture after auto focus.

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 and Capability_FocusMode is AF-S (1), the camera does not take a picture. But when auto focus failed and Capability_FocusMode is AF-C (2), the camera take a picture.

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

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

When the module prepared to get a preview image, the module issues kNkMAIDEvent_AddPreviewImage.

When the module prepared to get a main image, the module issues kNkMAIDEvent_Add to source object.

2.176. 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 finish in focus (effective only as the Get value) 0x11 : AF finish 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) and Capability_LiveViewMode is Tripod(1).

2.177. 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.

2.178. 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) and Capability_LiveViewMode is Tripod(1).

2.179. 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 (Default: 0: infinity -> close)

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 driving finish correctly by getting value of this capability, or referring "focus drive state" of "Display information" in Live view image. (please refer NkMAIDCapability_GetLiveViewImage)

This capability is valid when Capability_FocusMode isn't MF(0) and CPU lens is attached and also Capability_LiveViewStatus is ON(1) and Capability_LiveViewMode is Tripod(1).

2.180. 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 breadth size half was subtracted from the length and breadth 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 is valid when Capability_LiveViewStatus is ON(1) and Capability_LiveViewMode is Tripod(1).

2.181. CaptureDustImage

This will take a dust off ref photo.

Capability	kNkMAIDCapability_CaptureDustImage
Object types	Source
ulType	kNkMAIDCapType_Process
ulOperations	kNkMAIDCapOperation_Start

The format type of dust off ref photo is kNkMAIDFileType_NDF.

When the lens is not attached or the Capability_ShootingMode is Mirror up or Capability_LiveViewStatus is ON(1), the ulVisibility and ulOperations of this capability is invalid.

About dust off ref photo, there is no preview image, so kNkMAIDEvent_AddPreviewImage is not issued.

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.

2.182. DeleteDramImage

This will delete DRAM image specified by Capability_CurrentPreviewID.

Capability	kNkMAIDCapability_DeleteDramImage
Object types	Source
ulType	kNkMAIDCapType_Process
ulOperations	kNkMAIDCapOperation_Start

The DRAM image to be deleted is specified by Capability_CurrentPreviewID.

This capability execution timing is limited to the following 2 cases.

1. Before receiving kNkMAIDEvent_AddChild
2. After issuing kNkMAIDCapability_Acquire for ImageObject, and before issuing kNkMAIDCommand_Close

In case of 1, the client set Capability_CurrentPreviewID and execute this capability, the deletion will be completed.

In of 2, the client will issue Capability_Acquire for Image object and cancel Capability_Acquire by kNkMAIDCommand_Abort, and set Capability_CurrentPreviewID and execute this capability, so, the deletion will be completed.

In case of RAW+JPEG, kNkMAIDEvent_AddPreviewImage is issued only for JPEG image. that is not issued for RAW image.

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.

About dust off ref photo and RAW file of RAW+JPEG, there is no preview image, so kNkMAIDEvent_AddPreviewImage is not issued. But the client can delete the DRAM image by using Item ID notified by data parameter of kNkMAIDEvent_AddChild.

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

2.183. 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

2.184. CurrentPreviewID

This will specify the DRAM image operated now.

Capability	kNkMAIDCapability_CurrentPreviewID
Object types	Source
ulType	kNkMAIDCapType_Unsigned
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set

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

Preview ID is notified by data parameter of kNkMAIDEvent_AddChild.

In case of image data to which kNkMAIDEvent_AddPreviewImage is not issued, RAW of RAW+JPEG and dust off ref photo, the client uses Item ID notified by data parameter of kNkMAIDEvent_AddChild as Preview ID.

The value of this capability is referred by Capability_GetPreviewImageLow, Capability_GetPreviewImageNormal, Capability_DeleteDramImage.

2.185. GetPreviewImageLow

This will get the quality low preview image about specified DRAM image.

Capability	kNkMAIDCapability_GetPreviewImageLow
Object types	Source
ulType	kNkMAIDCapType_Array kNkMAIDArrayType_Unsigned
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray

The image data to be acquired is specified with Capability_CurrentPreviewID. A dust off ref photo and a RAW file of RAW+JPEG does not support preview image, this capability will be error.

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

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

When the client want to get preview 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, the preview image will be set to kNkMAIDArray.pData.

The pixel size of the preview image will be maximum pixel size or less.

Specification of image quality low preview image

maximum pixel size	image quality	maximum file size
576 x 376	Jpeg Basic	32768 Byte

The format of the preview image is shown below.

D i s p l a y i n f o r m a t i o n	image pixel size	X size	2Byte	
		Y size	2Byte	
	focus point		1Byte	0 - 51
	direction of rotation		1Byte	0:none 1:counterclockwise 2:clockwise
	quality of image		1Byte	0:RAW+FINE 1:RAW+NORMAL 2:RAW+BASIC 3:RAW 4:TIFF 5:JPEG-FINE 6:JPEG-NORMAL 7:JPEG-BASIC
	crop mode		1Byte	0:FX 2:DX 3:5:4
	type of AF		1Byte	0:phase detection AF 1:contrast AF
	focus information according to control area		8Byte	If the focus point is in focus, it sets 1, if the focus point out of focus, it sets 0 to each bit 0-50. The focus point is shown at "2.139.FocusPreferredArea". Please refer to following figure, "focus
	focus informaton		1Byte	0:out of focus, 1:in focus
	AF area size	X size	2Byte	
		Y size	2Byte	
	contrast AF evaluation position	coordinates	2Byte	
		Y coordinates	2Byte	
	contrast AF evaluation area	X coordinates	2Byte	
		Y coordinates	2Byte	
	reserved		2Byte	
P r e v i e w i m a g e	image data			

focus information according to control area format

Bit	7	6	5	4	3	2	1	0
1 byte	8	7	6	5	4	3	2	1
2 byte	16	15	14	13	12	11	10	9
3 byte	24	23	22	21	20	19	18	17
4 byte	32	31	30	29	28	27	26	25
5 byte	40	39	38	37	36	35	34	33
6 byte	48	47	46	45	44	43	42	41
7 byte						51	50	49
8 byte								

2.186. GetPreviewImageNormal

This will get the quality normal preview image about specified DRAM image.

Capability	kNkMAIDCapability_GetPreviewImageNormal
Object types	Source
ulType	kNkMAIDCapType_Array kNkMAIDArrayType_Unsigned
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray

The image data to be acquired is specified with Capability_CurrentPreviewID. A dust off ref photo and a RAW file of RAW+JPEG does not support preview image, this capability will be error.

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

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

When the client want to get preview 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, the preview image will be set to kNkMAIDArray.pData.

The pixel size of the preview image will be maximum pixel size or less.

Specification of image quality normal preview image

maximum pixel size	image quality	maximum file size
1600 x 1200	Jpeg Basic	288256 Byte

The format of the preview image is same as in case of Capability_GetPreviewImageLow.

2.187. 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 vewi 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	64byte / Display information + 900Kbyte / Max Live view image

The format of the Live view image is shown below.

D i s p l a y i n f o r m a t i o n	appending JPEG image size	horizontal size	2Byte	when expanding 640x480 is fixed. when non expanding, 640x480 or less.(depend on crop mode)
		Vertical size	2Byte	
	total size	horizontal size	2Byte	Standard of coordinates
		Vertical size	2Byte	
	display area size	horizontal size	2Byte	When non-expanding, it becomes whole size = display area size.
		Vertical size	2Byte	
	display center coordinates	horizontal position	2Byte	
		Vertical position	2Byte	
	size of AF frame	horizontal position	2Byte	
		Vertical size	2Byte	
	AF frame center coordinates	horizontal position	2Byte	
		Vertical position	2Byte	
	reserved		4Byte	
	selected focus point		1Byte	0 : 51 *for hand-held only
	direction of rotation		1Byte	0:none 1:counterclockwise 2:clockwise
	focus drive state		1Byte	0 : not driving 1 : driving
	[D3] Exposure deflection [D300] reserved		1Byte	[D3] 1/6 EV step [D300] reserved
	shutter speed		4Byte	upper 2 byte : numerator lower 2 byte : denominator
	aperture		2Byte	Aperture = F number*100
	count down time		2Byte	It counts down from 3600(For one hour) every second.(It counts down by the rise in heat for 30 seconds.)
	focus result		1Byte	0 : no information 1 : out of focus 2 : in focus
	state that AF can be driven		1Byte	0 : AF drive impossibility. 1 : AF drive possible
	reserved		22Byte	
L i v e v i e w i m a g e	Live view image data			

2.188. 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 (Deault: False)

When Capability_LiveViewStatus is ON(1), the ulOperations of this capability is set to read-only.

2.189. CameraType

This will get the camera type.

Capability	kNkMAIDCapability_CameraType
Object types	Source
ulType	kNkMAIDCapType_Unsigned
ulOperations	kNkMAIDCapOperation_Get
Data	one of eNkMAIDCameraType 0x20 : D3 0x21 : D300

2.190. 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

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

When CPU lens is not attached, the module returns 0.

3. Standard Capabilities

3.1. AsyncRate

Capability	kNkMAIDCapability_AsyncRate
Object types	Module
ulType	kNkMAIDArrayType_Unsigned
ulOperations	kNkMAIDCapOperation_Get

3.2. ProgressProc

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

3.3. EventProc

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

3.4. DataProc

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

3.5. UIRequestProc

Capability	kNkMAIDCapability_UIRequestProc
Object types	Module
ulType	kNkMAIDCapType_Callback
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set

3.6. IsAlive

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

3.7. Children

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

3.8. State

Capability	kNkMAIDCapability_State
<i>Not supported</i>	

3.9. Name

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

3.10. Description

Capability	kNkMAIDCapability_Description
<i>Not supported</i>	

3.11. Interface

Capability	kNkMAIDCapability_Interface
Object types	Source
ulType	kNkMAIDCapType_String
ulOperations	kNkMAIDCapOperation_Get

3.12. DataTypes

Capability	kNkMAIDCapability_DataTypes
Object types	Source, Item
ulType	kNkMAIDCapType_Unsigned
ulOperations	kNkMAIDCapOperation_Get

3.13. DateTime

Capability	kNkMAIDCapability_DateTime
Object types	Item
ulType	kNkMAIDCapType_DateTime
ulOperations	kNkMAIDCapOperation_Get

3.14. StoredBytes

Capability	kNkMAIDCapability_StoredBytes
Object types	Item, Image, Thumbnail
ulType	kNkMAIDCapType_Unsigned
ulOperations	kNkMAIDCapOperation_Get

3.15. Eject

Capability	kNkMAIDCapability_Eject
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Not supported

3.16. Feed

Capability	kNkMAIDCapability_Feed
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Not supported

3.17. Capture

This will take a picture and save the image to SDRAM.

Capability	kNkMAIDCapability_Capture
Object types	Source
ulType	kNkMAIDCapType_Process
ulOperations	kNkMAIDCapOperation_Start

When the Capability_ShootingMode is CL(1) or CH(2), the number of shots set by the Capability_ContinuousShootingNum is taken on continuous shooting mode.

When the Capability_ShootingMode is Mirror up(4), the ulVisibility and ulOperation of this capability is set to invalid.

When preview image about shooting image is prepared, kNkMAIDEvent_AddPreviewImage is issued by module. And, when main image is prepared, kNkMAIDEvent_Add is issued to source object.

If the client execute 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 and Capability_LiveViewMode without Auto focus.

3.18. Mode

Capability	kNkMAIDCapability_Mode
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Not supported

3.19. Acquire

Capability	kNkMAIDCapability_Acquire
Object types	Image, Thumbnail
ulType	kNkMAIDCapType_Process
ulOperations	kNkMAIDCapOperation_Start

3.20. Start

Capability	kNkMAIDCapability_Start
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Not supported

3.21. Length

Capability	kNkMAIDCapability_Length
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Not supported

3.22. SampleRate

Capability	kNkMAIDCapability_SampleRate
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Not supported

3.23. Stereo

Capability	kNkMAIDCapability_Stereo
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Not supported

3.24. Samples

Capability	kNkMAIDCapability_Samples
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Not supported

3.25. Filter

Capability	kNkMAIDCapability_Filter
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Not supported

3.26. Prescan

Capability	kNkMAIDCapability_Prescan
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Not supported

3.27. AutoFocus

This will execute phase detection AF.

Capability	kNkMAIDCapability_AutoFocus
Object types	Source
ulType	kNkMAIDCapType_Process
ulOperations	kNkMAIDCapOperation_Start

The ulVisibility of this capability is valid, when Capability_LiveViewStatus is OFF(0) or when Capability_LiveViewStatus is ON(1) and Capability_LiveViewMode is hand-held(0).

When Capability_FocusMode is MF(0) or when a CPU lens is not attached or when Capability_LiveViewStatus is ON(1) , the ulVisibility and ulOperations of this capability is invalid.

3.28. AutoFocusPt

Capability	kNkMAIDCapability_AutoFocusPt
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Not supported

3.29. Focus

Capability	kNkMAIDCapability_Focus
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Not supported

3.30. Coords

Capability	kNkMAIDCapability_Coords
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Not supported

3.31. Resolution

Capability	kNkMAIDCapability_Resolution
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Not supported

3.32. Preview

Capability	kNkMAIDCapability_Preview
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Not supported

3.33. Negative

Capability	kNkMAIDCapability_Negative
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Not supported

3.34. Bits

Capability kNkMAIDCapability_Bits

Not supported

3.35. Planar

Capability kNkMAIDCapability_Planar

Not supported

3.36. Lut

Capability kNkMAIDCapability_Lut

Not supported

3.37. Transparency

Capability kNkMAIDCapability_Transparency

Not supported

3.38. Threshold

Capability kNkMAIDCapability_Threshold

Not supported

3.39. Pixels

Capability kNkMAIDCapability_Pixels

Object types Image, Thumbnail

ulType kNkMAIDCapType_Size

ulOperations kNkMAIDCapOperation_Get

3.40. ForceScan

Capability kNkMAIDCapability_ForceScan

Not supported

3.41. ForcePrescan

Capability kNkMAIDCapability_ForcePrescan

Not supported

3.42. ForceAutoFocus

Capability kNkMAIDCapability_ForceAutoFocus

Not supported

3.43. NegativeDefault

Capability kNkMAIDCapability_NegativeDefault
Not supported

3.44. Firmware

Capability kNkMAIDCapability_Firmware
Not supported

3.45. CommunicationLevel1

Capability kNkMAIDCapability_CommunicationLevel1
Not supported

3.46. CommunicationLevel2

Capability kNkMAIDCapability_CommunicationLevel2
Not supported

3.47. BatteryLevel

This will show the remain of battery by percent.

Capability kNkMAIDCapability_BatteryLevel
Object types Source
ulType kNkMAIDCapType_Integer
ulOperations kNkMAIDCapOperation_Get

The camera returns the 6 kind of value, 1, 20, 60, 80, 100.

When the value of this capability is 1, the current camera status will be set to the prohibition of taking a picture, and the value of Capability_LiveViewProhibit is set to “battery shortage”(0x00000100) .

When the external power supply is used, this capability returns -1.

3.48. FreeBytes

Not supported

3.49. FreeItems

Not supported

3.50. Remove

Not supported

3.51. FlashMode

Capability	kNkMAIDCapability_FlashMode
Object types	Source
ulType	kNkMAIDCapType_Enum kNkMAIDArrayType_Unsigned
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_GetArray, kNkMAIDCapOperation_Set,
Data	one of eNkMAIDFlashMode 0: FrontCurtain 1: Rear-curtain sync 2: Slow 3: Red-eye reduction 4: Slow sync with red-eye reduction 5: Solw rear-curtain sync

3.52. ModuleType

Capability	kNkMAIDCapability_ModuleType
Object types	Module
ulType	kNkMAIDCapType_Unsigned
ulOperations	kNkMAIDCapOperation_Get

3.53. AcquireStreamStart

Capability	kNkMAIDCapability_AcquireStreamStart
	<i>Not supported</i>

3.54. AcquireStreamStop

Capability	kNkMAIDCapability_AcquireStreamStop
	<i>Not supported</i>

3.55. AcceptDiskAcquisition

Capability	kNkMAIDCapability_AcceptDiskAcquisition
Object types	Source
ulType	kNkMAIDCapType_Generic
ulOperations	kNkMAIDCapOperation_Get, kNkMAIDCapOperation_Set

3.56. Version

Capability	kNkMAIDCapability_Version
Object types	Module
ulType	kNkMAIDCapType_Unsigned
ulOperations	kNkMAIDCapOperation_Get

3.57. FilmFormat

Capability	kNkMAIDCapability_FilmFormat
<i>Not supported</i>	

3.58. TotalBytes

Capability	kNkMAIDCapability_TotalBytes
<i>Not supported</i>	

4. Event

The client can't receive the event as follows while opening item object.

4.1. AddChild

This event will be issued when the child is added under a 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 Item ID is same as Preview ID indicated by kNkMAIDEvent_AddPreviewImage.

4.2. RemoveChild

This event will be issued when the child is removed under a object .

Event kNkMAIDEvent_RemoveChild

Object types Module, Source, Item

data parameter Removed child ID

4.3. WarmingUp

Event kNkMAIDEvent_WarmingUp

Not supported

4.4. WarmedUp

Event kNkMAIDEvent_WarmedUp

Not supported

4.5. 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.

4.6. OrphanedChildren

Event kNkMAIDEvent_OrphanedChildren

Not supported

4.7. CapChangeValueOnly

This event will be issued when the 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 value of capability is changed (the array data, ulVisibility, ulOperations is not changed).

4.8. AddPreviewImage

This will be issued when the preview image can be acquired.

Event kNkMAIDEvent_AddPreviewImage

Object types Source

data parameter Preview ID

This event notifies that the client can get the preview image about taking a picture on DRAM.

When the client take a picture on "RAW + JPEG(XXX)" mode, the preview event is issued only for JPEG image. Preview image event is not issued for RAW image and for a dust off ref photo.

Preview ID will be set to the data parameter of call back function. The data type of Preview ID is ULONG.

Item object will not be created when this event is issued, so client can't open ItemObject with Preview ID.

The client can open Item Object after the kNkMAIDEvent_AddImage event reception.

5. Vendor Unique Results

5.1. 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.

5.2. BufferNotReady

Free area of DRAM in the camera is not enough for taking a picture.

Result	kNkMAIDResult_BufferNotReady
Command	Start
Capability	Capture, AFCapture, CaptureDustImage
Explanation	The Image data is temporarily stored in the DRAM until it is transferred to the CF card or the host computer. While continuous shooting, the camera cannot take a picture if the DRAM is full.
Expected Action	The client sends capture command again or displays the message that the camera cannot take a picture.

5.3. 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.

5.4. MediaFull

This is not used in the current module

5.5. InvalidMedia

This is not used in the current module

5.6. EraseFailure

This is not used in the current module

5.7. 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.

5.8. 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.

5.9. 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_ShutterSpeed is set to bulb.
Expected Action	The client displays the message that the camera cannot take a picture and is waiting for next command.

5.10. OutOfFocus

Autofocus operation is failed.

Result	kNkMAIDResult_OutOfFocus
Command	Start
Capability	Capture, AutoFocus, AFCapture, CheckContrastAF
Explanation	When the Capability_FocusMode is AF-S(1) and autofocus 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.

5.11. Protected

This is not used in the current module.

5.12. FileExists

This is not used in the current module.

5.13. SharingViolation

This is not used in the current module.

5.14. 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.

5.15. 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.

5.16. FileRemoved

This is not used in the current module.

5.17. 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.

5.18. NonCPULens

This is not used in the current module.

5.19. ReleaseButtonPressed

This is not used in the current module.

5.20. BatteryExhausted

This is not used in the current module.

5.21. 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.

5.22. InvalidString

This is not used in the current module.

5.23. NotInitialized

This is not used in the current module.

5.24. CaptureDisable

This is not used in the current module.

5.25. 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.

5.26. 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.

5.27. 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.

5.28. 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.

5.29. MFDriveEnd

The focus position reached the end of focus area in manual focus.

Result	kNkMAIDResult_MFDriveEnd
Command	Set
Capability	MFDrive
Explanation	When Live view is executed in Tripod and 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.