

Canon EOS Digital SDK

EDSDK 13.10.0 API Programming Reference

02/22/2019

History

Version	Date	Reason and content of revision
13.9.10	12/13/2018	<ul style="list-style-type: none"> * Deleted RAW development functionality * Added samples for the following programming languages <ul style="list-style-type: none"> * Swift * CSharp
13.10.0	02/22/2019	* Added support for the EOS RP

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1. Introduction

EDSDK stands for EOS Digital Camera Software Development Kit. EDSDK provides the functions required to control cameras connected to a host PC, digital images created in digital cameras, and images downloaded to the PC. This document describes the collection of functions implemented in the EDSDK library.

EDSDK provides an interface for accessing image data shot using a Canon digital camera. Using EDSDK allows users to implement the following types of representative functions in software.

- Allows transfer of images in a camera to storage media on a host PC.
- Allows remotely connected cameras and the image being shot to be controlled from a host PC.

1.1 Basic Topics

EDSDK provides a C language interface for accessing Canon digital cameras and data created these cameras. EDSDK is designed to provide standard methods of accessing different camera models and their data. Using EDSDK allows users to implement Canon digital camera features in software.

There are two versions of EDSDK. One runs under a Windows environment, while the other runs under a Macintosh environment.

1.2 Supported Environments

EDSDK can be used on system configurations such as shown in the table below.

1.2.1 Target Environment

Windows	
OS	Windows 7,8,8.1,10 (64bit/32bit)
Memory	1GB or more
Hard disk	50 MB or more available storage
Interface *1	SuperSpeed USB(USB3.1 Gen1) SuperSpeed USB(USB3.0) Hi-Speed USB(USB2.0)
Macintosh	
OS	Mac OSX 10.12-10.14 (64bit)
Memory	1GB or more
Hard disk	50 MB or more available storage
Interface *1	SuperSpeed USB(USB3.1 Gen1) SuperSpeed USB(USB3.0) Hi-Speed USB(USB2.0)

Notes: *1 Complies with camera specifications and PC USB interface.

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1.3 Supported Cameras

1.3.1 Supported Cameras

The following models are supported as of February 2019.

Supported Cameras	Camera Control
EOS RP	✓
PowerShot SX70 HS	✓
EOS R	✓
EOS Kiss M / EOS M50	✓
EOS Kiss X90 / EOS REBEL T7 / EOS 2000D / EOS 1500D	✓
EOS REBEL T100/EOS 4000D / EOS 3000D	✓
EOS M100	✓ *1
EOS 6D Mark II	✓
EOS Kiss X9 / EOS Rebel SL2 / EOS 200D	✓
EOS Kiss X9i / EOS Rebel T7i / EOS 800D	✓
EOS 9000D / EOS 77D	✓
EOS M6	✓ *1
EOS M5	✓ *1
EOS 5D Mark IV	✓
EOS-1D X Mark II	✓
EOS 80D	✓
EOS Kiss X80 / EOS Rebel T6 / EOS 1300D	✓
EOS M10	✓ *1
EOS 5DS	✓
EOS 5DS R	✓
EOS 8000D / EOS REBEL T6sEOS 760D	✓
EOS Kiss X8i / EOS REBEL T6i / EOS 750D	✓
EOS M3	✓ *1
EOS 7D Mark II	✓
EOS Kiss X70/EOS 1200D/EOS REBEL T5/EOS Hi	✓
EOS M2	✓ *1
EOS 70D	✓
EOS Kiss X7 / EOS 100D / EOS REBEL SL1	✓
EOS Kiss X7i / EOS 700D / EOS REBEL T5i	✓
EOS-1D C	✓
EOS 6D	✓
EOS M	✓ *1
EOS Kiss X6i / EOS 650D / EOS REBEL T4i	✓
EOS-1D X	✓
EOS 5D Mark III	✓
EOS Kiss X50 / EOS REBEL T3 / EOS 1100D	✓

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EOS Kiss X5 / EOS REBEL T3i / EOS 600D	✓
EOS 60D	✓
EOS Kiss X4 / EOS REBEL T2i / EOS 550D	✓
EOS-1D Mark IV	✓
EOS 7D	✓
EOS Kiss X3 / EOS REBEL T1i / EOS 500D	✓
EOS 5D Mark II	✓
EOS 50D	✓
EOS DIGITAL REBEL XS / 1000D/ KISS F	✓
EOS DIGITAL REBEL Xsi / 450D / Kiss X2	✓
EOS-1Ds Mark III	✓
EOS 40D	✓
EOS-1D Mark III	✓

Notes: If you need to handle RAW images on your software, please contact SDK support team in your country.

*1 Remote capture functions are not supported.

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1.4 Installing EDS DK

1.4.1 Including Header Files

The following files are required in order to use the EDS DK using C/C++ language.

EDSDK.h, EDS DKTypes.h, EDS DKErrors.h

Windows:

Be sure to copy the three header files listed above into the header access folder of the development environment.
Be sure to add them to the application project workspace.

*Since these are C language header files, it is necessary to provide header files depending on the programming language.

Macintosh:

Be sure to include the three header files listed above.

1.4.2 Linking the Library

After header files are included, it is necessary to link the EDS DK library as described below.

Windows:

There are two methods of linking EDS DK: one where EDS DK.lib files are copied to the folder specified by a development environment library path and EDS DK.lib is specified as an import module, and another where EDS DK.dll is loaded by the LoadLibrary function.

When loading EDS DK.dll, get pointers to each EDS DK function using the GetProcAddress function and assign them to function pointer variables. When calling each EDS DK function, make the call via the function pointer variable obtained here.

Macintosh:

Add EDS DK.framework to Groups&Files.

1.4.3 Executing the EDS DK Client Application

Windows:

All DLLs are required in order to execute an EDS DK client application.

All of the modules in the DLL folder must be copied into the same folder where the EDS DK client application is in.

Notes: Do not copy the collection of EDS DK library files to the system folder or extension folder.

Macintosh:

Place EDS DK.framework in an application directory such as Contents/frameworks/.

It is also possible to load “EDS DK.framework” as a source file.

Notes: Do not copy the EDS DK framework file to the system folder.

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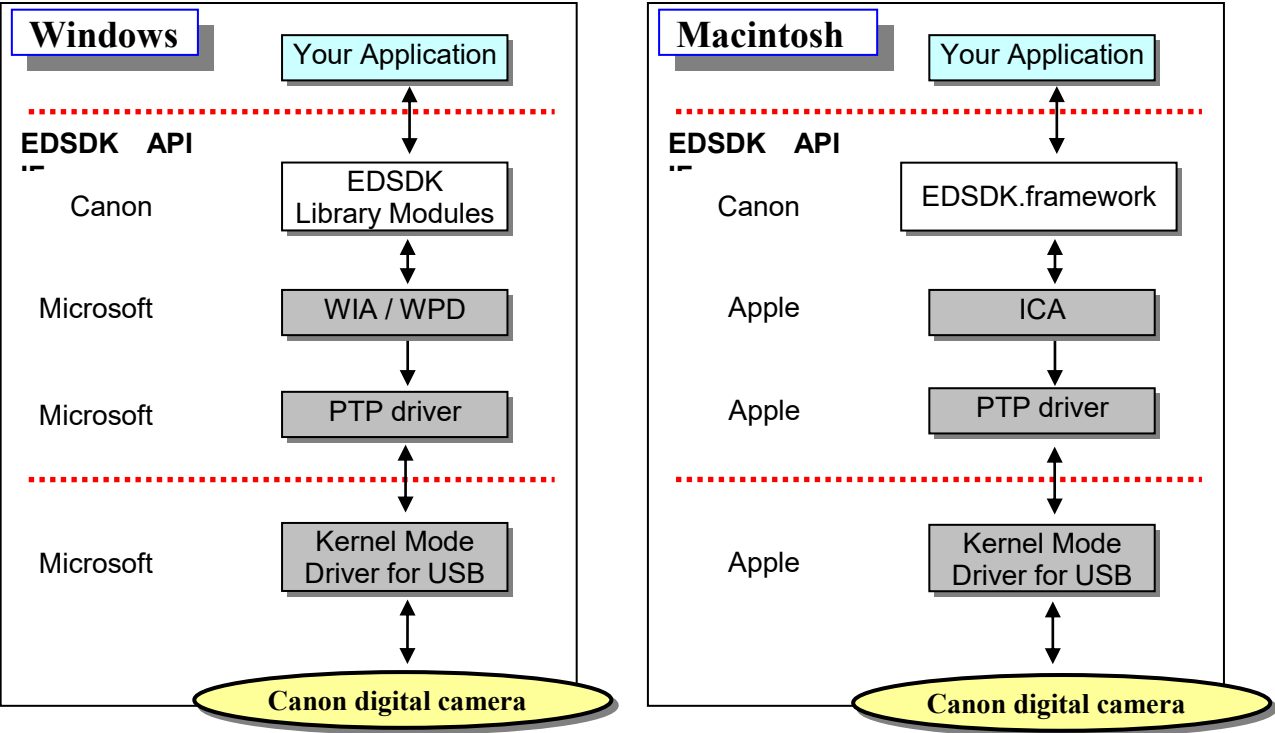
2. Overview

2.1 Protocol for Remote Connection

PTP is an abbreviation of “Picture Transfer Protocol.” PTP is a standard protocol used to transfer images to a PC. A device driver for each model is unnecessary when connecting to an OS that supports PTP.

2.2 System Architecture

The following figure shows the configuration of software when an Canon digital camera has been connected.



Your Application : An EDSDK client application using the EDSDK library

Note: Use the OS standard driver for the EOS digital driver when using a camera that uses PTP for the remote connection protocol when connecting to an OS that supports PTP. Otherwise, the driver provided by Canon must be used.

Figure 2-1 System Architecture

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2.3 Library Modules

The following figure shows the module configuration of EDSDK.

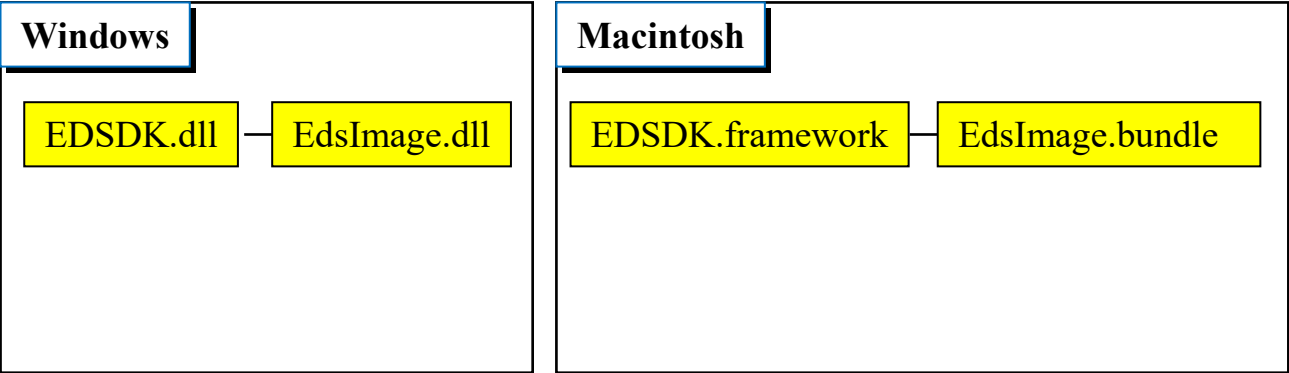


Figure 2-2 Library Module Configuration

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2.4 EDSDK Objects

As shown in Figure 2-3, EDSDK employs a hierarchical structure with a camera list at the root in order to control and access cameras connected to the host PC. This hierarchical structure consists of the following elements: camera list, cameras, volumes, folders, image files, audio files, etc.

These elements are treated as belonging to one of the following object categories: **EdsCameraListRef**, **EdsCameraRef**, **EdsVolumeRef**, and **EdsDirectoryItemRef**. Having a hierarchical structure, these four objects may have child objects.

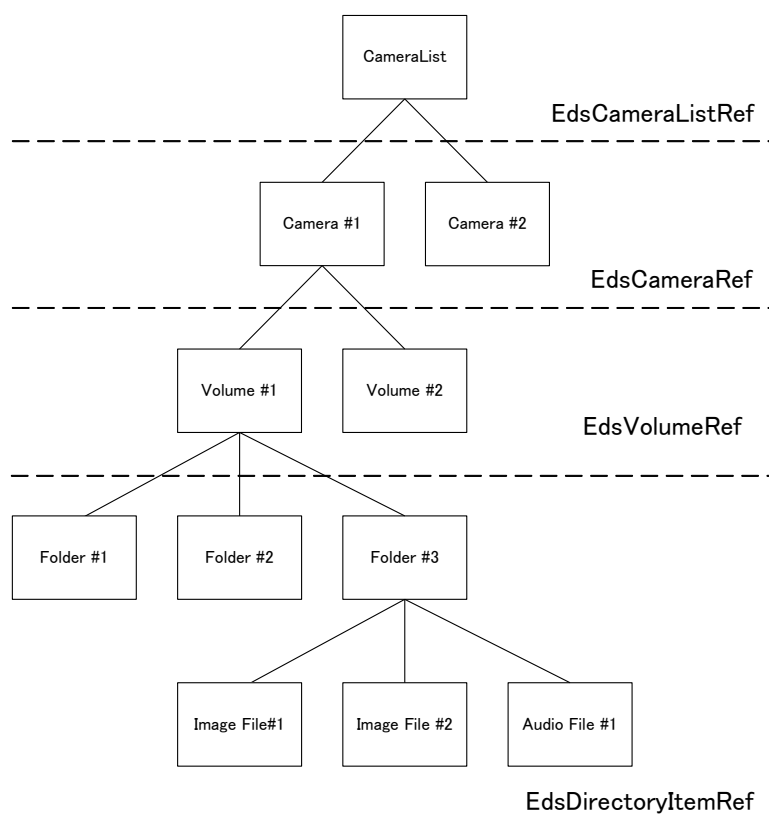


Figure 2-3 Hierarchical Structure of EDSDK Objects

Although the four objects shown above are used to access connected cameras, on an image file is transferred to the host PC, the object used to control that image changes even if it is the same image file.

As shown in Figure 2-4 below, the **EdsStreamRef** object is used to control input/output when transferring images from the camera to the host. Then **EdsImageRef** is used to control the image file transferred to the host. This is due to the fact that operations differ for an image file is stored in the camera versus an image file stored on the host.

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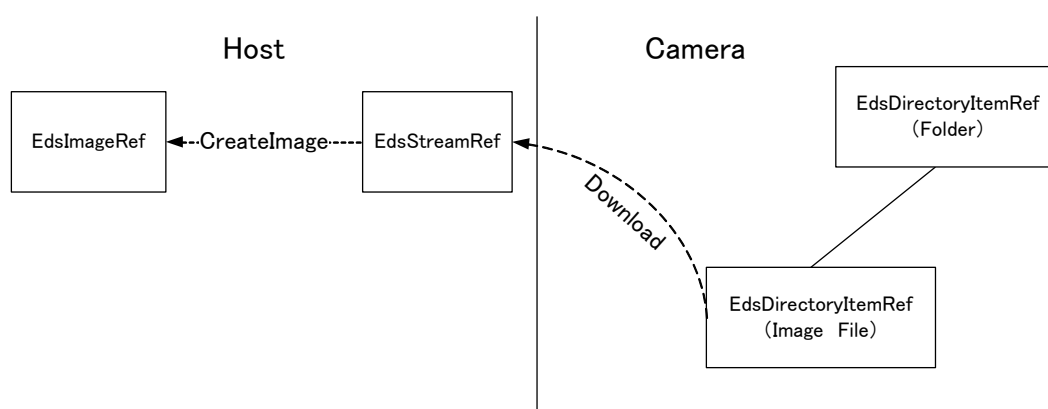


Figure 2-4 Changes in Controlled Objects

Bringing together the above information, the following objects can be handled using the EDSDK.

- (1) **EdsCameraListRef**
This object represents an enumeration of the cameras remotely connected to the host PC by USB interface. This object can be used to select the camera to be controlled from among the cameras currently connected with EDSDK client application. This object can also be used when getting an EdsCameraRef child object.
- (2) **EdsCameraRef**
This object represents a remotely connected camera. This object is used to control the camera or to get an EdsVolumeRef object when accessing the memory card, which is a child object of the camera.
- (3) **EdsVolumeRef**
This object represents the memory card inside the camera. If the camera model allows two memory cards to be installed at once, the EdsVolumeRef object represents one memory card each. This object is used to get an EdsDirectoryItemRef object, which is a child object, when performing operations on a file or folder on the memory card.
- (4) **EdsDirectoryItemRef**
This object represents a file or folder on the camera. When files are downloaded from the camera, each file to be downloaded is treated as one of these objects.
- (5) **EdsImageRef**
This object represents image data. This data is obtained from image files. This object is used to retrieve and control information included with an image such as thumbnails and parameters.
- (6) **EdsStreamRef**
This object represents the file I/O stream. An open stream on the host PC can be specified as the download destination when downloading files in the camera to the host PC. Streams are also used when loading image files stored on the storage media of the host PC into an EDSDK client application. Furthermore, EdsStreamRef objects can also be created in memory.
- (7) **EdsEvfImageRef**
This object represents PC live view image data. When using a camera model that supports live view, live view image data set can be downloaded from the camera. Information such as zoom and histogram data is included with image data.

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2.5 Object Management

2.5.1 Object Management Using a Reference Counter

Applications built using the EDS SDK carry out object management using a reference counter.

EDSDK stores a reference counter for all objects. The reference counter is set to 1 when an object has been allocated. The developer increases the reference counter by 1 at the point that the object is required by the program, and lowers it by 1 when the object is no longer needed. When a reference counter reaches 0, the associated object is automatically deleted by the EDS SDK. The developer must, therefore, explicitly declare that an object is being referred when it is required by the program. EdsRetain and EdsRelease are provided as APIs for controlling object reference counters.

2.5.2 Releasing Resources when Exiting the Library

Applications built using the EDS SDK will release all allocated resources when EdsTerminateSDK is called.

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2.6 Properties

Properties are stored under EDS SDK for camera and image objects. For example, properties may represent values such as camera Av and Tv. The functions **EdsGetPropertyData** and **EdsSetPropertyData** are used to get and set these properties. Since this API takes objects of undefined type as arguments, the properties that can be retrieved or set differ depending on the given object. In addition, some properties have a list of currently settable values. **EdsGetPropertyDesc** is used to get this list of settable values. For details on types of properties, the objects they are associated with, and the role they play, see [Properties](#).

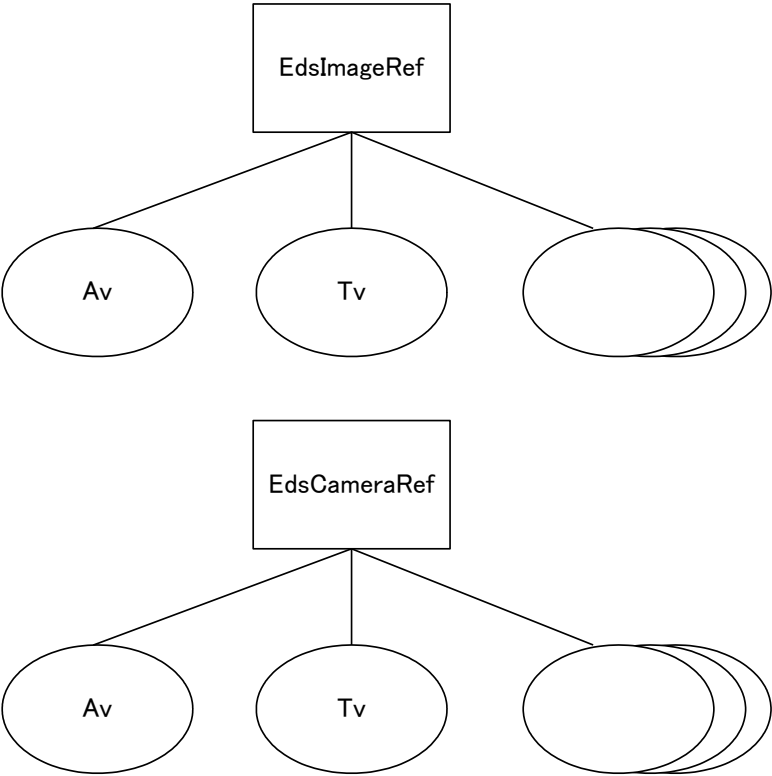


Figure 2-5 Example of Object Properties

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2.7 Camera Status

Cameras remotely connected to the host PC can be in one of several states: UI lock, UI lock release, direct transfer, and direct transfer release. Camera state transitions are shown in the figure below.

(1) UI Lock

In this state, all operations of the camera unit are disabled and only operations from the host PC are accepted. This allows data and instructions to be safely sent from the host PC to the camera.

(2) UI Lock Release

In this state, operations of the camera unit are enabled. Although data and instructions can be sent from the host PC to the camera in this state, conflicts may arise.

(3) Direct Transfer (for models with an Easy Direct button)

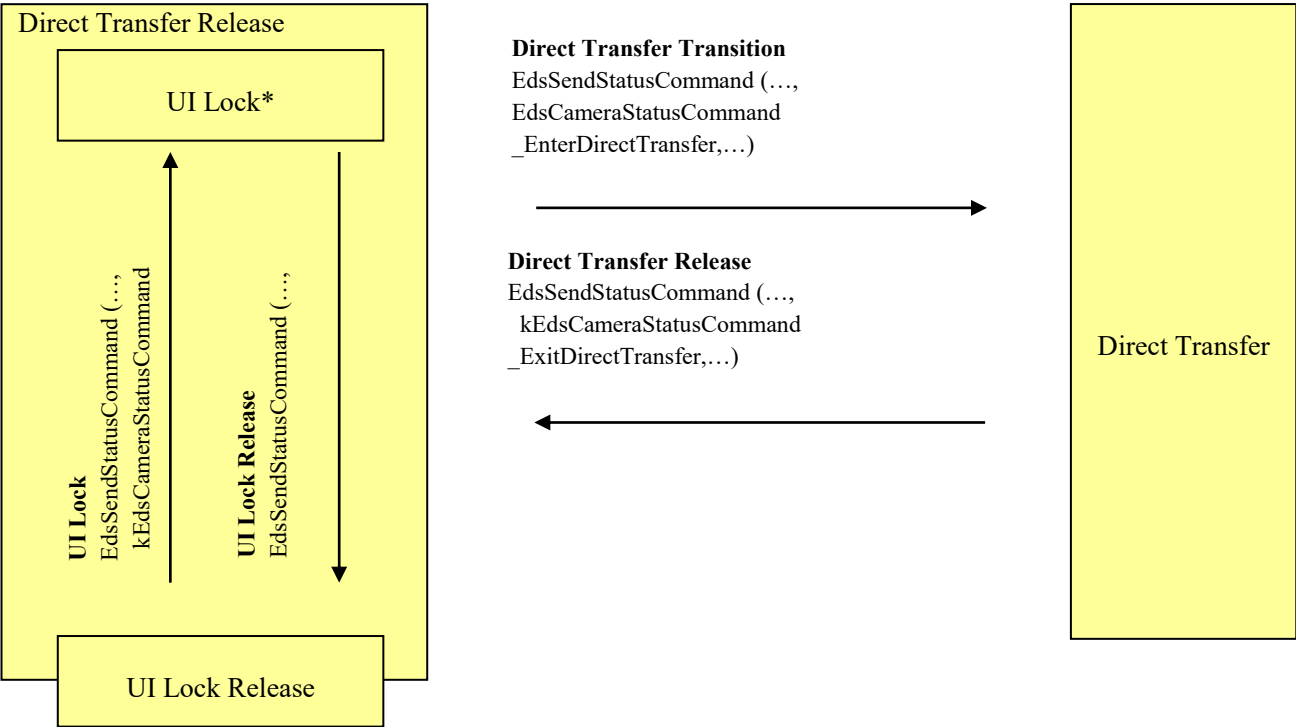
In this state, the camera is currently directly transferring data. Available camera operations are limited to those functions related to the direct transfer. It is possible to send instructions from the PC to the camera in this state.

A direct transfer request event notification (kEdsObjectEvent_DirItemRequestTransferDT) is issued to the EDSDK client application connected to the camera when an operation for starting image download is initiated using camera controls. The EDSDK client application receives this event and begins processing for downloading images from the camera.

(4) Direct Transfer Release

This state indicates that direct transfer is not currently being carried out.

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* The camera sometimes automatically locks/releases when in the UI Lock state.

Figure 2-6 Camera State Transitions

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2.8 Asynchronous Events

An asynchronous event is a mechanism used to issue notifications from the EDSDK to the application regarding cameras connected to the host PC or state changes that have occurred for a camera. For example, if a state change occurs where a camera’s shooting mode changes and a new image that needs to be transferred to the PC has been shot, a notification of that fact is sent to the application regardless of its state (asynchronously). An event handler capable of the specific processing required for a particular event must be registered in order to receive such an event (notification). An event handler is a user function called when an event is received. Event handlers are also referred to as “callback functions.” Users can allow events to be accepted by creating and registering callback functions that accept events issued by EDSDK.

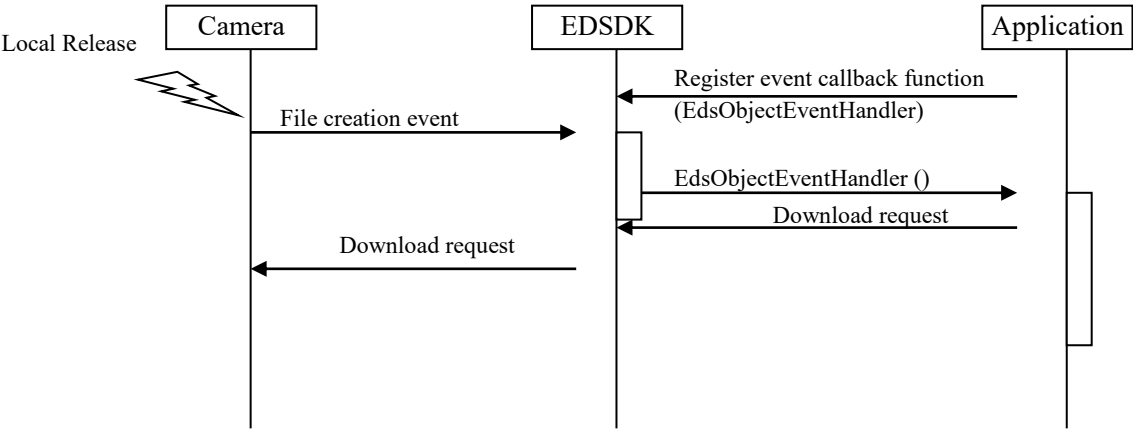


Figure 2-7 Example of a Camera Operation-Based Event Notification

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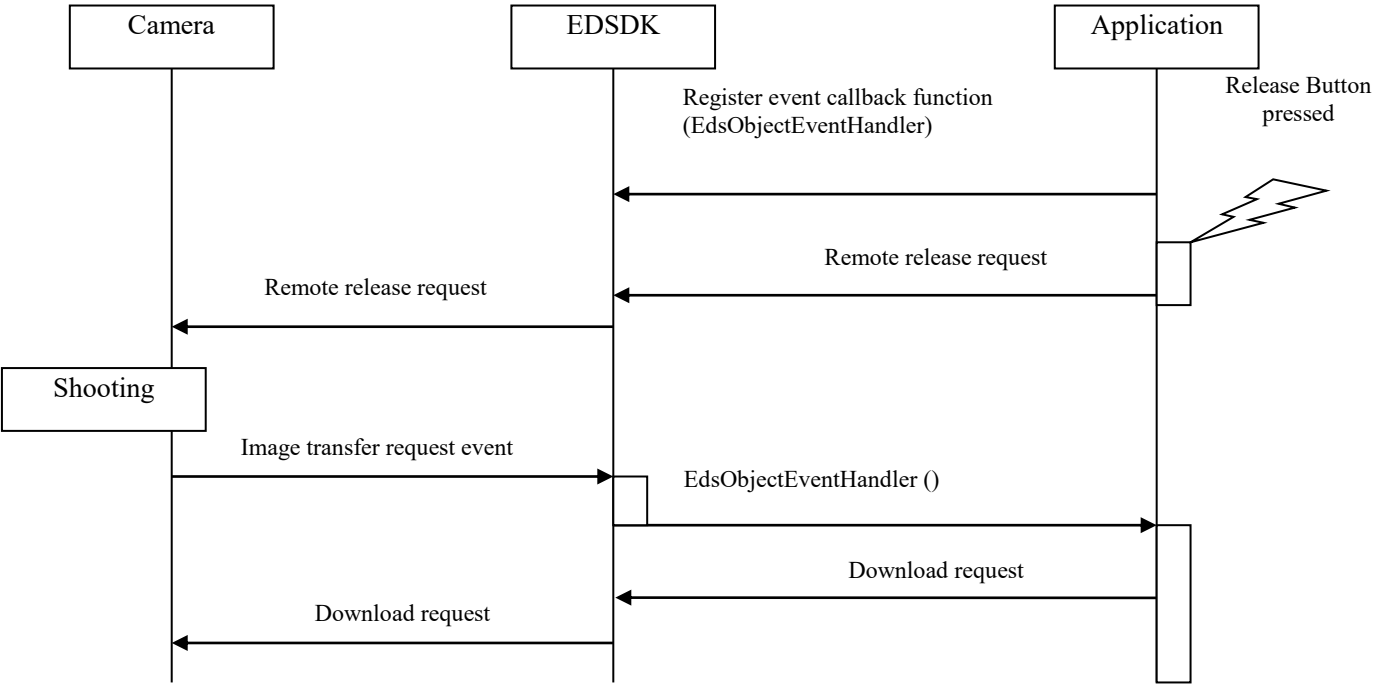


Figure 2-8 Host PC Operation-Related Event Notification

Revision History/Date		Corrections	Reviser	Remarks

When an event occurs, the EDS SDK executes the callback function registered by the user. The callback function is executed on a newly generated thread and takes information depending on the event type as arguments (as specified by the event ID).

The user must release objects as they become unneeded.

There are three types of events issued from the EDS SDK to a client application: object-related events, property-related events, and state-related events.

(1) Object-related events

This is the group of events where request notifications are issued to create, delete or transfer image data stored in a remotely connected camera (in memory) or image files on the memory card.

(2) Property-related events

This is the group of events where notifications are issued regarding changes in the properties of a remotely connected camera.

(3) State-related events

This is the group of events where notifications are issued regarding changes in the state of a remotely connected camera, such as the activation of a shut-down timer.

For details on event information and the role events play, see the section [Asynchronous Events](#).

Revision History/Date		Corrections	Reviser	Remarks

2.9 Initializing and Terminating the Library

The user must initialize the EDSDK library in order to use EDSDK functions other than those for getting device information from a camera. The user must also terminate the library when EDSDK functions are no longer needed. Be sure to execute initialization and termination of the library once each within the application process.

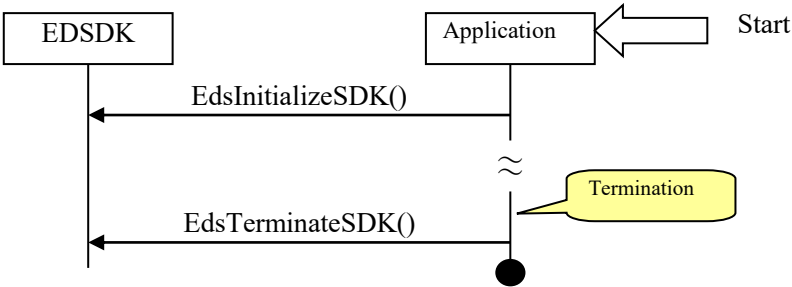


Figure 2-9 Initialization and Termination

Revision History/Date		Corrections	Reviser	Remarks

2.10 Accessing a Camera

The EDSDK provides methods of accessing and controlling a camera. In order to allow more than one camera connected to the host PC by USB or other means, it is possible to get all camera objects by repeatedly calling **EdsGetChildAtIndex** by specifying an index of child objects on the camera list.

The number of cameras connected can be obtained using **EdsGetChildCount**. Specify 0 as the index passed to **EdsGetChildAtIndex** if there is only one camera.

EDSDK client application can open a session with any one of the connected cameras. Opening a session means connecting to a camera at the application level so that it is possible to control that camera from the application and get associated properties and events. To open a session, specify the camera in question and call **EdsOpenSession**. Open sessions must be closed using **EdsCloseSession** when communications are finished.

Note that EDSDK does not support opening sessions with more than one camera at once.

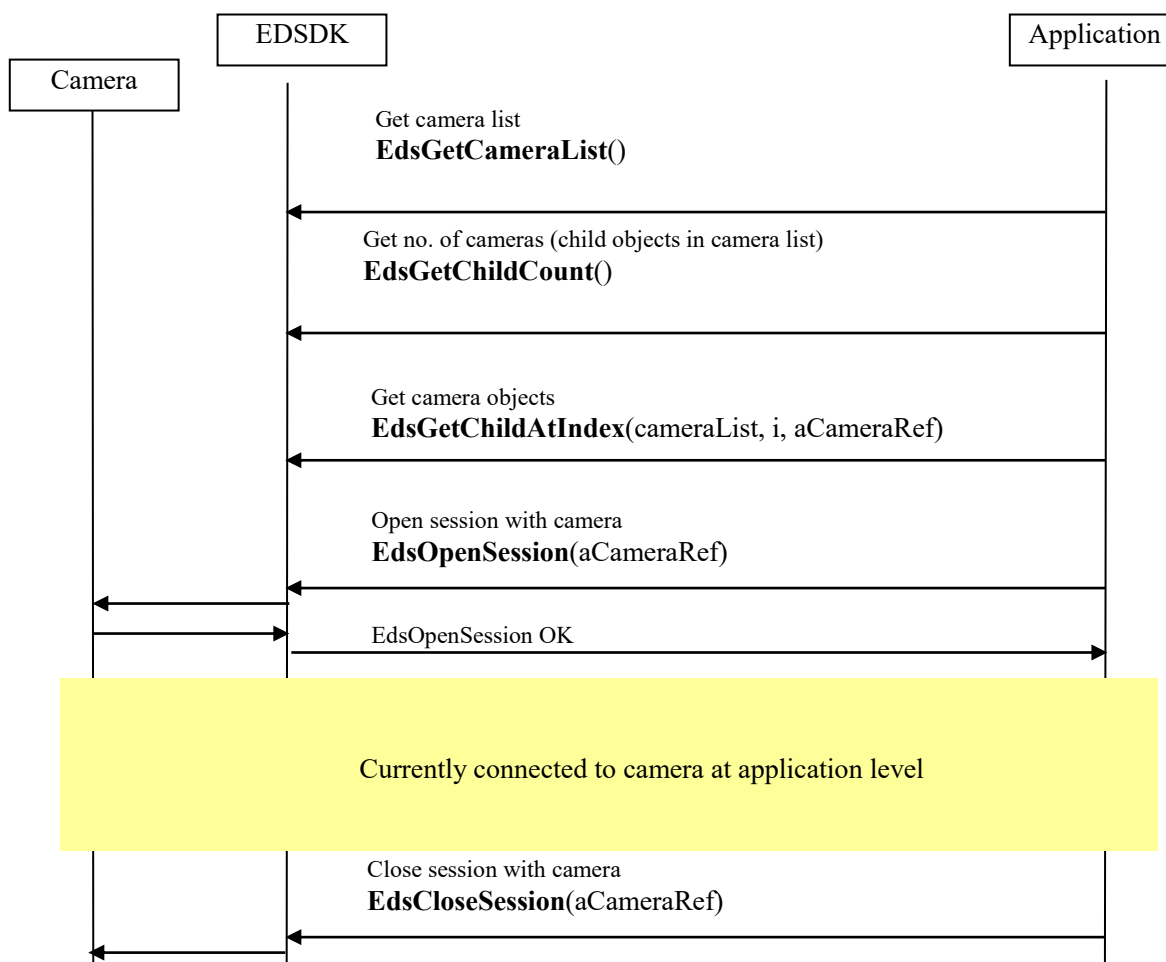


Figure 2-10 Camera Access

Revision History/Date	Corrections	Reviser	Remarks

Notes on Developing Windows Applications

When creating applications that run under Windows, a COM initialization is required for each thread in order to access a camera from a thread other than the main thread.

To create a user thread and access the camera from that thread, be sure to execute **CoInitializeEx(NULL, COINIT_APARTMENTTHREADED)** at the start of the thread and **CoUninitialize()** at the end.

Sample code is shown below. This is the same when controlling EdsVolumeRef or EdsDirectoryItemRef objects from another thread, not just with EdsCameraRef .

```
void TakePicture(EdsCameraRef camera)
{
    // Executed by another thread
    HANDLE hThread = (HANDLE)_beginthread(threadProc, 0, camera);
    // Block until finished
    ::WaitForSingleObject( hThread, INFINITE );
}

void threadProc(void* lParam)
{
    EdsCameraRef camera = (EdsCameraRef)lParam;

    CoInitializeEx( NULL, COINIT_APARTMENTTHREADED );

    EdsSendCommand(camera, kEdsCameraCommand_PressShutterButton,
        kEdsCameraCommand_ShutterButton_Completely);

    EdsSendCommand(camera, kEdsCameraCommand_PressShutterButton,
        kEdsCameraCommand_ShutterButton_OFF);

    CoUninitialize();

    _endthread();
}
```

Revision History/Date	Corrections	Reviser	Remarks

2.11 Transferring Files in the Camera

This section describes how to access files in the camera and transfer them to the host PC.

Although it is possible to access the camera and control the properties of files (such as the date of creation and protection settings), it is not possible to analyze file properties. Files must therefore be transferred in order to get file properties. A method for transferring thumbnails (header information) only is also provided for such cases.

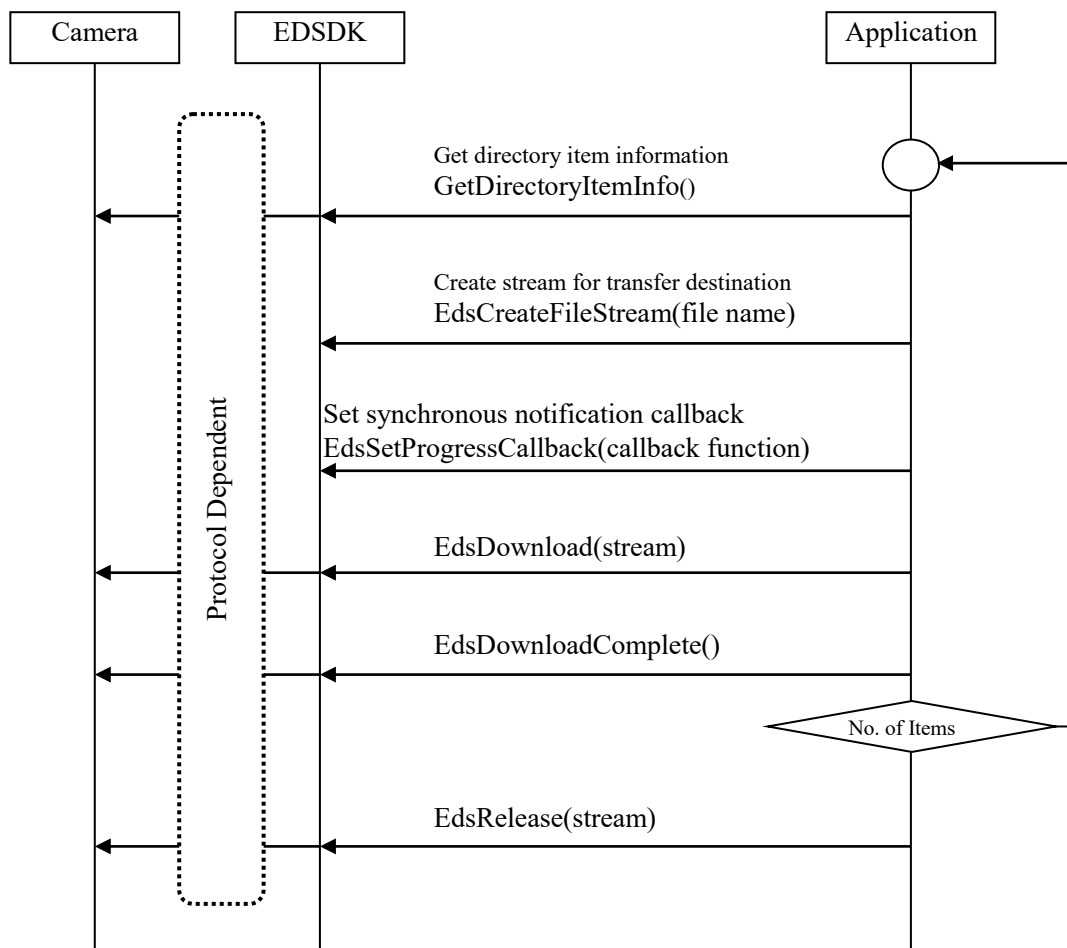


Figure 2-11 Transfer of Files in Camera

Revision History/Date	Corrections	Reviser	Remarks

2.12 Transferring Captured Images

When a shoot command is sent from the host PC to the camera, the camera will record the image shot in a buffer inside the camera. Once the shot has been taken, the callback function set using **EdsSetPropertyEventHandler**, **EdsSetObjectEventHandler**, and **EdsSetCameraStateEventHandler** will be called by the EDSDK. The user must sequentially transfer the images stored in the camera buffer to the host PC.

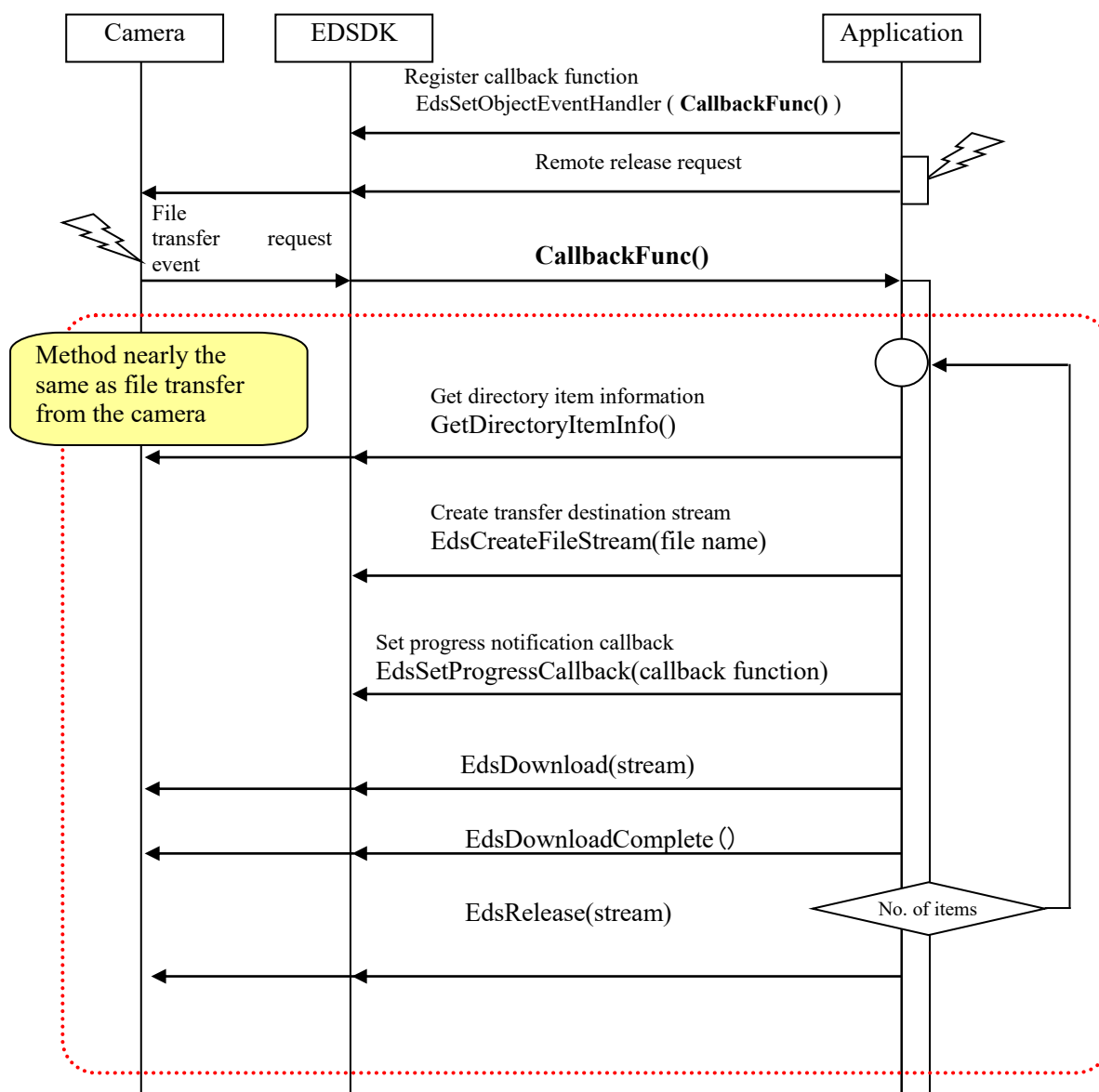


Figure 2-12 Capture Image Transfer

Revision History/Date	Corrections	Reviser	Remarks

2.13 Handling Image Objects

2.13.1 Overview

As touched on in the section on EDSDK objects, it is impossible to get an image object reference from an image file stored in a camera. An image object reference can only be obtained after first downloading the image file to a host PC.

An image object is an object that has properties. Camera properties such as Tv and Av that are used while shooting images are stored and can be obtained using **EdsGetPropertyData**.

2.13.2 Getting and Setting Properties

The following figure shows the sequence for getting properties from a camera image.

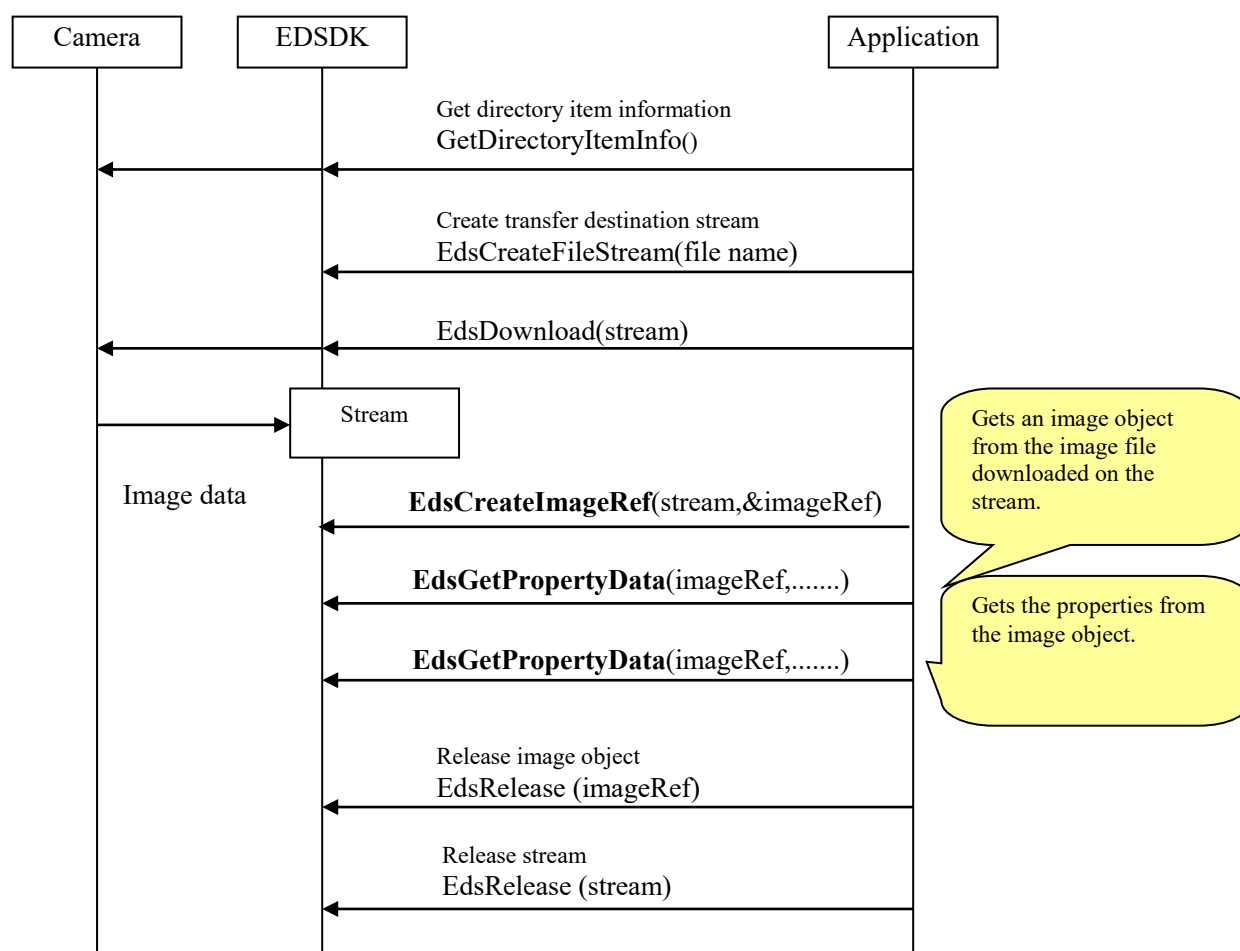


Figure 2-13 Getting an Image Object and Its Properties

Revision History/Date		Corrections	Reviser	Remarks

2.14 Basic Data Type Definitions

This section introduces the basic data types used under the EDS SDK. These data types are defined as C language types.

```
typedef void          EdsVoid;
typedef int           EdsBool;

typedef char          EdsChar;
typedef char          EdsInt8;
typedef unsigned char EdsUInt8;
typedef short         EdsInt16;
typedef unsigned short EdsUInt16;
typedef long          EdsInt32;
typedef unsigned long EdsUInt32;

#ifdef __MACOS__
#ifdef __cplusplus
    typedef long long    EdsInt64;
    typedef unsigned long long EdsUInt64;
#else
    typedef SInt64       EdsInt64;
    typedef UInt64       EdsUInt64;
#endif
#else
    typedef __int64      EdsInt64;
    typedef unsigned __int64 EdsUInt64;
#endif

typedef float         EdsFloat;
typedef double        EdsDouble;
```

2.15 EDS SDK Errors

Most of the APIs supplied by EDS SDK return an error code of type `EdsError` as their return value.

The return value of an API that terminates normally is `EDS_ERR_OK`. If an error occurs, the return value of the API in question is set to the error code indicating the root cause of the error and any passed parameters are stored as undefined values. (Note that an API used to control files is not limited to returning an error related to file control.)

For error codes, see the list given in the header file `EdsError.h` or see [EDS ERROR Lists](#) at the end of the section describing APIs in this document.

Revision History/Date	Corrections	Reviser	Remarks

3. API Reference

3.1 API Details

API specifications are explained in the following format.

Description

Indicates the main API function.

Syntax

EdsError EdsXXXXXX(EdsUInt32 **in**XXXX, EdsBaseRef ***out**XXX);

Indicates the syntax for calling the API.

Parameters

Explains each argument in the syntax individually.

In the syntax, argument names in the format **in**XXX represent arguments for which you enter values. Argument names in the format **out**XXX represent arguments with values set by the libraries (that is, passed by reference). Before calling APIs, you must prepare variables for storing the data to be retrieved.

Return Values

Explains API return values.

See Also

Indicates information related to the API.

Note

Considerations when using the API.

Example

Sample code.

Revision History/Date		Corrections	Reviser	Remarks

3.1.1 EdsInitializeSDK

Description

Initializes the libraries.

When using the EDSDK libraries, you must call this API once before using EDSDK APIs.

Syntax

EdsError **EdsInitializeSDK()**

Parameters

None

Return Values

Returns EDS_ERR_OK if successful. In other cases, see the [EDS Error Lists](#).

See Also

- Related APIs
- EdsTerminateSDK

Example

- See [Sample 1](#).

3.1.2 EdsTerminateSDK

Description

Terminates use of the libraries.

Calling this function releases all resources allocated by the libraries.

Syntax

EdsError **EdsTerminateSDK()**

Parameters

None

Return Values

Returns EDS_ERR_OK if successful. In other cases, see the [EDS Error Lists](#).

See Also

- Related APIs
- EdsInitializeSDK

Example

- See [Sample 1](#).

3.1.3 EdsRetain

Description

Increments the reference counter of existing objects.

Revision History/Date		Corrections	Reviser	Remarks

Syntax

EdsUInt32 EdsRetain(EdsBaseRef inRef)

Parameters

inRef

Objects of all types in the EDSDK can be designated.

Type	Description
EdsCameraListRef	A list of remote cameras
EdsCameraRef	A particular remote camera
EdsVolumeRef	A volume on the camera's recording media
EdsDirectoryItemRef	A directory or file in the volume
EdsImageRef	An image file on the host computer
EdsStreamRef	Stream data on the remote camera or host computer

Return Values

Returns a reference counter if successful. For errors, returns 0xFFFFFFFF.

The return value is 4 bytes, and the maximum value of the reference counter is 65535.

See Also

- Related APIs
EdsRelease

3.1.4 EdsRelease

Description

Decrements the reference counter to an object. When the reference counter reaches 0, the object is released.

Syntax

EdsUInt32 EdsRelease (EdsBaseRef inRef)

Parameters

inRef

Objects of all types in the EDSDK can be designated.

(EdsCameraListRef, EdsCameraRef, EdsDirectoryItemRef, EdsImageRef, or EdsStreamRef)

Return Values

Returns a reference counter if successful. For errors, returns 0xFFFFFFFF.

See Also

- Related APIs
EdsRetain, EdsGetCameraList, EdsGetChildAtIndex, and EdsGetParent, EdsCreateImage

Note

- The reference counter is incremented not only for objects with a reference counter incremented explicitly by means of EdsRetain but also for EDSDK objects retrieved by means of EdsGetCameraList, EdsGetChildAtIndex, or EdsGetParent (refer to the objects that can be designated with inRef), for which the reference counter is incremented by one implicitly. Thus, when objects are no longer needed, you must use this API to decrease the reference counter.

Revision History/Date	Corrections	Reviser	Remarks

Example

- See [Sample 1](#).

3.1.5 EdsGetChildCount

Description

Gets the number of child objects of the designated object.

Example: Number of files in a directory

Syntax

```
EdsError EdsGetChildCount ( EdsBaseRef inRef, EdsUInt32* outCount )
```

Parameters

inRef

EdsCameraListRef, EdsVolumeRef, EdsCameraRef, or EdsDirectoryItemRef.

outCount

Pointer to the variable for receiving the child object of the object designated by inRef.

Return Values

Returns EDS_ERR_OK if successful. In other cases, see the [EDS Error Lists](#).

See Also

- Related APIs
EdsGetChildAtIndex

Example

- See [Sample 2](#).

3.1.6 EdsGetChildAtIndex

Description

Gets an indexed child object of the designated object.

Relevant object	Child object that can be retrieved
Camera list	Camera
Camera	Volume
Volume	Directory item
Directory item	Directory item (folder or file)

Syntax

```
EdsError EdsGetChildAtIndex(
    EdsBaseRef inRef,
    EdsInt32 inIndex,
    EdsBaseRef* outRef )
```

Parameters

inRef

Designate the parent object of the object to get. You can designate EdsCameraListRef, EdsCameraRef,

Revision History/Date	Corrections	Reviser	Remarks

EdsVolumeRef, or EdsDirectoryItemRef.

inIndex

Designate the index of the child object list. The index is 0-based, so designate 0 to get the first child object.

outRef

The indexed child object.

Return Values

Returns EDS_ERR_OK if successful. In other cases, see the [EDS Error Lists](#).

See Also

- Related APIs
EdsGetChildCount and EdsGetParent

Note

The reference counter is implicitly 1 for the retrieved child object. When the object is not needed, you must use EdsRelease to decrease the reference counter.

Example

- See [Sample 2](#).

3.1.7 EdsGetParent

Description

Gets the parent object of the designated object.

Syntax

EdsError **EdsGetParent(EdsBaseRef inRef, EdsBaseRef *outParentRef);**

Parameters

inRef

The EdsCameraListRef, EdsCameraRef, EdsVolumeRef, or EdsDirectoryItemRef object.

outParentRef

Returns a pointer to the variable for receiving the parent object reference.

Return Values

Returns EDS_ERR_OK if successful. In other cases, see the [EDS Error Lists](#).

See Also

- For details on object parent-child relationships, see [EDSDK Objects](#).
- Related APIs
EdsGetChildAtIndex and EdsRelease

Note

The reference counter is implicitly 1 for the retrieved parent object. When the object is not needed, you must use EdsRelease to decrease the reference counter.

3.1.8 EdsGetCameraList

Description

Gets camera list objects.

Revision History/Date		Corrections	Reviser	Remarks

Syntax

EdsError **EdsGetCameraList**(**EdsCameraListRef** ***outCameraListRef**)

Parameters

outCameraListRef

When the return value is EDS_ERR_OK, a list of cameras connected to the host computer is specified in outCameraListRef.

When the return value is other than EDS_ERR_OK, the content of outCameraListRef is unspecified.

Return Values

Returns EDS_ERR_OK if successful. In other cases, see the [EDS Error Lists](#).

See Also

- Related APIs
EdsRelease, EdsGetChildCount, and EdsGetChildAtIndex

Note

- The reference counter is implicitly 1 for the retrieved camera list. When the object is not needed, you must use EdsRelease to decrease the reference counter.

Example

- See [Sample 2](#).

3.1.9 EdsGetDeviceInfo

Description

Gets device information, such as the device name.

Because device information of remote cameras is stored on the host computer, you can use this API before the camera object initiates communication (that is, before a session is opened).

Syntax

EdsError **EdsGetDeviceInfo**(
EdsCameraRef **inCameraRef**,
EdsDeviceInfo ***outDeviceInfo**)

Parameters

inCameraRef

The camera object for which to get device information.

outDeviceInfo

Pointer to the EdsDeviceInfo structure for receiving device information.

EdsDeviceInfo

EdsDeviceInfo constituent elements	Type	Description
szPortName	EdsChar[]	Port name
szDeviceDescription	EdsChar[]	Device name
deviceSubType	EdsUInt32	Canon PTP cameras: 1 Canon PTP-IP cameras: 2

Revision History/Date		Corrections	Reviser	Remarks

If the camera involved in PTP communication is connected to a Windows computer on which WIA is installed, 0 is specified in DeviceSubType, representing standard Windows PTP.

Return Values

Returns EDS_ERR_OK if successful. In other cases, see the [EDS Error Lists](#).

3.1.10 EdsGetVolumeInfo

Description

Gets volume information for a memory card in the camera.

Syntax

```
EdsError EdsGetVolumeInfo(
    EdsVolumeRef inVolumeRef,
    EdsVolumeInfo *outVolumeInfo )
```

Parameters

inVolumeRef

Designate the volume object for which to get volume information.

outVolumeInfo

Specifies the pointer to the EdsVolumeInfo structure for receiving the volume information.

EdsVolumeInfo

EdsVolumeInfo constituent elements	Type	Description
storageType	EdsUInt32	Value defined by Enum EdsStorageType
access	EdsAccess	Value defined by Enum EdsAccess
maxCapacity	EdsUInt64	Maximum size (in bytes)
freeSpaceInBytes	EdsUInt64	Available capacity (in bytes)
szVolumeLabel	EdsChar[]	Volume name (an ASCII string)

Enum EdsStorageType <defined location>EDSDKTypes.h

Value	Description
0	No memory card inserted
1	Compact flash
2	SD card

Enum EdsAccess <defined location>EDSDKTypes.h

Value	Description
0	Read Only
1	Write Only
2	Read and Write
0xFFFFFFFF	Access error Note: This means that the designated memory card is in a state preventing use, such as when the card is not formatted.

Return Values

Returns EDS_ERR_OK if successful. In other cases, see the [EDS Error Lists](#).

Revision History/Date	Corrections	Reviser	Remarks

See Also

- Related APIs
EdsGetChildAtIndex

Note

- In the context of the EDSDK, volumes are objects representing memory cards.
- The constituent element access of EdsVolumeInfo is the access type when the file object is open.

3.1.11 EdsGetDirectoryItemInfo

Description

Gets information about the directory or file objects on the memory card (volume) in a remote camera.

Syntax

```
EdsError  EdsGetDirectoryItemInfo(
    EdsDirectoryItemRef  inDirItemRef,
    EdsDirectoryItemInfo* outDirItemInfo  )
```

Parameters

inDirItemRef

Designate the directory item object.

outDirItemInfo

Pointer to the DirectoryItemInfo structure for receiving the directory item information.

DirectoryItemInfo includes the following information.

Constituent elements	Description
size	The file size. For folders, the file size is indicated as 0.
isFolder	If a folder: True If not a folder: False
groupID	A non-zero integer. The same group ID is assigned to files that belong to the same group, such as RAW+JPEG images or RAW+AVI images.
option	An option when a direct transfer request is received (a kEdsObjectEvent_DirItemRequestTransferDT event).
szFileName	Returns the directory name or file name if successful. Example: "IMG_0060.JPG"
format	Returns the directory item type.

Return Values

Returns EDS_ERR_OK if successful. In other cases, see the [EDS Error Lists](#).

See Also

- For information on data types of the EDSDK, see ["Data Types Used by the APIs"](#) in the Appendix.

Example

- See [Sample 6](#).

Revision History/Date	Corrections	Reviser	Remarks

3.1.12 EdsOpenSession

Description

Establishes a logical connection with a remote camera.
Use this API after getting the camera's EdsCamera object.

Syntax

```
EdsError EdsOpenSession( EdsCameraRef inCameraRef );
```

Parameters

inCameraRef

Designate the camera object of the camera to connect to.

Return Values

Returns EDS_ERR_OK if successful. In other cases, see the [EDS Error Lists](#).

Note

Use the EdsCloseSession API to disconnect from the camera.

See Also

- Related APIs
EdsCloseSession

Example

- See [Sample 1](#).

3.1.13 EdsCloseSession

Description

Closes a logical connection with a remote camera.

Syntax

```
EdsError EDSAPI EdsCloseSession( EdsCameraRef inCameraRef );
```

Parameters

inCameraRef

Designate the camera object of the camera to disconnect from.

Return Values

Returns EDS_ERR_OK if successful. In other cases, see the [EDS Error Lists](#).

See Also

- Related APIs
EdsOpenSession

Example

- See [Sample 1](#).

Revision History/Date		Corrections	Reviser	Remarks

3.1.14 EdsSendCommand

Description

Sends a command such as "Shoot" to a remote camera.

Syntax

```
EdsError EdsSendCommand( EdsCameraRef inCameraRef,
                        EdsUInt32 inCommand, EdsUInt32 inParam )
```

Parameters

inCameraRef

Only a camera object can be designated.

inCommand

The command ID to send to the object.

In EDSDKTypes.h, you can designate commands defined by enum EdsCameraCommand.

inCommand	inParam	Description
kEdsCameraCommand_ExtendShutDownTimer	N/A	Requests to extend the time for the auto shut-off timer. (Keep Device On)
kEdsCameraCommand_DriveLensEvf	enum EdsEvfDriveLens	Drives the lens and adjusts focus This command is supported only in live view mode. This command is supported only for model of EOS Series.
kEdsCameraCommand_DoEvfAf	enum EdsEvfAf	Controls auto focus in live view mode. This command is supported only in live view mode.
kEdsCameraCommand_PressShutterButton	enum EdsShutterButton	Controls shutter button operations.
kEdsCameraCommand_SetRemoteShootingMode	enum DcRemoteShootingMode	Controls remote shooting mode. This command is supported only for model of PowerShot Series.

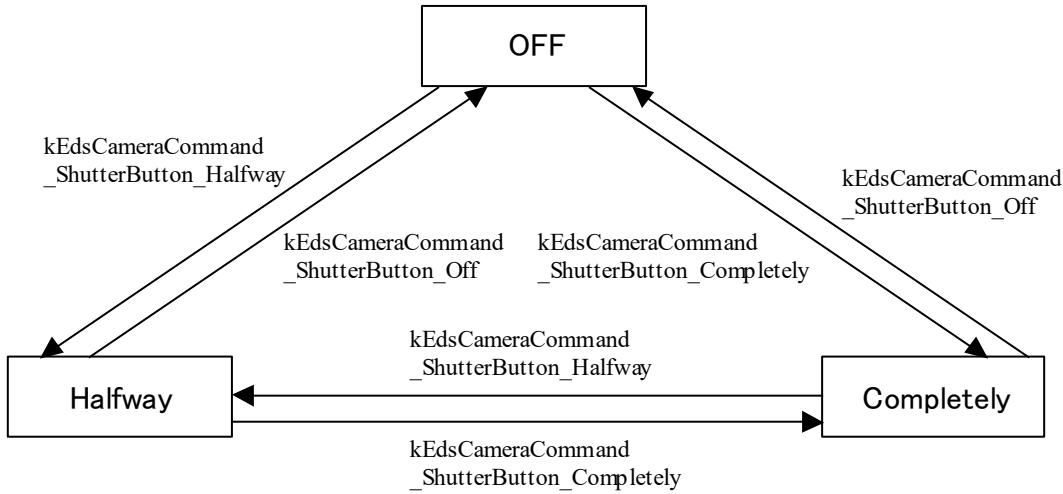
Return Values

Returns EDS_ERR_OK if successful. In other cases, see the [EDS Error Lists](#).

Note

This is a description of EdsShutterButton when kEdsCameraCommand_PressShutterButton is specified in InParam.

Revision History/Date	Corrections	Reviser	Remarks



In the above diagram, “OFF” represents the state in which the camera’s shutter button is not being pressed, “Halfway” represents the state in which it is being pressed halfway, and “Completely” represents the state in which it is being pressed completely. Since both the “Halfway” and “Completely” states are maintained continuously, they must be explicitly terminated by issuing the kEdsCameraCommand_ShutterButton_Off command.

Usually, AF operations are determined depending on camera and lens settings. Parameters for performing photometry that do not result in AF operations can also be used. Parameters depending on camera and lens settings cannot be used together with parameters that do not result in AF operations. Be sure to use in combination with the following in accordance with the settings you want to use.

	Depends on Camera/Lens Settings	No AF Operations
Halfway	kEdsCameraCommand_ShutterButton_Halfway	kEdsCameraCommand_ShutterButton_Halfway_NonAF
Completely	kEdsCameraCommand_ShutterButton_Completely	kEdsCameraCommand_ShutterButton_Completely_NonAF
OFF	kEdsCameraCommand_ShutterButton_Off	

Example
• See [Sample 9](#).

3.1.15 EdsSendStatusCommand

Description
Sets the remote camera state or mode.

Syntax
`EdsError EdsSendStatusCommand (EdsCameraRef inCameraRef,
EdsCameraStatusCommand inStatusCommand,
EdsInt32 inParam);`

Parameters
inCameraRef
Designate the camera object.

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inStatusCommand

Designate the particular mode ID to set the camera to.

In EDSTypes.h, you can designate commands defined by enum EdsCameraStatusCommand.

inStatusCommand	inParam	Description
kEdsCameraStatusCommand_UILock	N/A	Locks the UI
kEdsCameraStatusCommand_UIUnLock	N/A	Unlocks the UI
kEdsCameraStatusCommand_EnterDirectTransfer	N/A	Puts the camera in direct transfer mode
kEdsCameraStatusCommand_ExitDirectTransfer	N/A	Ends direct transfer mode

inParam

Normally, designat 0 in inParam.

If you want to turn off the camera TFT when locking the UI, designate 1 in inParam.

Return Values

Returns EDS_ERR_OK if successful. In other cases, see the [EDS Error Lists](#).

Note

These are pairs of commands to lock and unlock the UI, as well as to put the camera in direct transfer mode and exit this mode. If you switch modes by means of EdsSendStatusCommand, use EdsSendStatusCommand again to restore the original mode.

3.1.16 EdsSetCapacity

Description

Sets the remaining HDD capacity on the host computer(excluding the portion from image transfer),as calculated by subtracting the portion from the previous time.

Set a reset flag initially and designate the cluster length and number of free clusters.

Some cameras can display the number of shots left on the camera based on the available disk capacity of the host computer.

For these cameras, after the storage destination is set to the computer,use this API to notify the camera of the available disk capacity of the host computer.

Syntax

```
EdsError  EdsSetCapacity ( EdsCameraRef  inCameraRef,
                           EdsCapacity    inCapacity);
```

Parameters

InCameraRef

The reference of the camera which will receive the command.

Incapacity

The remaining capacity of a transmission place.

Return Values

Returns EDS_ERR_OK if successful. In other cases, see the [EDS Error Lists](#).

Note

3.1.17 EdsGetPropertySize

Description

Gets the byte size and data type of a designated property from a camera object or image object.

Revision History/Date	Corrections	Reviser	Remarks

Syntax

```
EdsError EdsGetPropertySize( EdsBaseRef inRef,
                             EdsPropertyID inPropertyID, EdsInt32 inParam,
                             EdsDataType *outEdsDataType, EdsUInt32 *outSize )
```

Parameters

inRef

Designate either EdsCameraRef or EdsImageRef.

inPropertyID

Designate the property ID.

inParam

Additional information of the property. Used to designate multiple additional items of information, if the property has such information that can be set or retrieved. For descriptions of values that can be designated for each property, see the description of inParam for EdsGetPropertyData.

outEdsDataType

Returns the property data type. The particular item defined by enum EdsDataType is returned.

outSize

Stores the property size. The data type and value returned varies depending on the property ID. See ["Property Details"](#) for further information.

Return Values

Returns EDS_ERR_OK if successful. In other cases, see the [EDS Error Lists](#).

See Also

- Related APIs
EdsGetPropertyData and EdsGetPropertyDesc
- For further information on properties, see Properties.

Example

See [Sample 3](#).

3.1.18 EdsGetPropertyData

Description

Gets property information from the object designated in inRef.

Syntax

```
EdsError EdsGetPropertyData(
    EdsBaseRef inRef,
    EdsPropertyID inPropertyID,
    EdsInt32 inParam,
    EdsUInt32 inPropertySize,
    EdsVoid *outPropertyData )
```

Revision History/Date		Corrections	Reviser	Remarks

Parameters

inRef

Designate the object for which to get properties. The EDSDK objects you can designate are EdsCameraRef or EdsImageRef.

inPropertyID

Designate the property ID.

inParam

Designate additional property information. Use additional property information if multiple items of information such as picture styles can be set or retrieved for a property.

Values that can be designated for each property are as follows.

■ Properties regarding camera settings

inPropertyID	inParam setting value
kEdsPropID_ProductName	0
kEdsPropID_BodyIDEx	0
kEdsPropID_OwnerName	0
kEdsPropID_MakerName	0
kEdsPropID_DateTime	0
kEdsPropID_FirmwareVersion	0
kEdsPropID_BatteryLevel	0
kEdsPropID_BatteryQuality	0
kEdsPropID_CFn	Custom Function number
kEdsPropID_SaveTo	0
kEdsPropID_CurrentStorage	0
kEdsPropID_CurrentFolder	0
kEdsPropID_LensStatus	0
kEdsPropID_Artist	0
kEdsPropID_Copyright	0

■ Properties regarding images

InPropertyID	inParam setting value
kEdsPropID_ImageQuality	0
kEdsPropID_Orientation	0
kEdsPropID_ICCProfile	0
kEdsPropID_FocusInfo	0
kEdsPropID_WhiteBalance	0
kEdsPropID_ColorTemperature	0
kEdsPropID_WhiteBalanceShift	0
kEdsPropID_ColorSpace	Current color space value : 0 To designate ColorMatrix by designating EdsCameraRef: one of the ColorMatrix numbers To designate a picture style by designating EdsCameraRef: one of enum EdsPictureStyle
kEdsPropID_PictureStyle	Current picture style value (or, if EdsImageRef is designated, either the current value or the value at the time of shooting): 0 One of these: User setting 1: kEdsPictureStyle_User1 User setting 2: kEdsPictureStyle_User2 User setting 3: kEdsPictureStyle_User3

Revision History/Date	Corrections	Reviser	Remarks

kEdsPropID_PictureStyleCaption	0
--------------------------------	---

■ Properties regarding image capture

InPropertyID	inParam setting value
kEdsPropID_AEMode	0
kEdsPropID_DriveMode	0
kEdsPropID_ISOSpeed	0
kEdsPropID_MeteringMode	0
kEdsPropID_AFMMode	0
kEdsPropID_Av	0
kEdsPropID_Tv	0
kEdsPropID_ExposureCompensation	0
kEdsPropID_FocalLength	0
kEdsPropID_AvailableShots	0
kEdsPropID_Bracket	0
kEdsPropID_WhiteBalanceBracket	0
kEdsPropID_LensName	0
kEdsPropID_AEBracket	0
kEdsPropID_FEBracket	0
kEdsPropID_ISOBracket	0
kEdsPropID_NoiseReduction	0
kEdsPropID_FlashOn	0
kEdsPropID_RedEye	0
kEdsPropID_FlashMode	0
kEdsPropID_GPSVersionID	0
kEdsPropID_GPSLatitudeRef	0
kEdsPropID_GPSLatitude	0
kEdsPropID_GPSLongitudeRef	0
kEdsPropID_GPSLongitude	0
kEdsPropID_GPSAltitudeRef	0
kEdsPropID_GPSAltitude	0
kEdsPropID_GPSTimeStamp	0
kEdsPropID_GPSSatellites	0
kEdsPropID_GPSMapDatum	0
kEdsPropID_GPSDataStamp	0
kEdsPropID_GPSStatus	0
kEdsPropID_DC_Zoom	0
kEdsPropID_DC_Strobe	0
kEdsPropID_LensBarrelStatus	0

■ Properties regarding live view

InPropertyID	inParam setting value
kEdsPropID_Evf_OutputDevice	0
kEdsPropID_Evf_Mode	0
kEdsPropID_Evf_WhiteBalance	0
kEdsPropID_Evf_ColorTemperature	0
kEdsPropID_Evf_DepthOfFieldPreview	0
kEdsPropID_Evf_Zoom	0

Revision History/Date	Corrections	Reviser	Remarks

kEdsPropID_Evf_ZoomPosition	0
kEdsPropID_Evf_HistogramY	0
kEdsPropID_Evf_HistogramR	0
kEdsPropID_Evf_HistogramG	0
kEdsPropID_Evf_HistogramB	0
kEdsPropID_Evf_ImagePosition	0
kEdsPropID_Evf_HistogramStatus	0
kEdsPropID_Evf_AFMode	0

inPropertySize

Designate the byte size of the property. If the property data size is not known in advance, it can be retrieved by means of EdsGetPropertySize.

outPropertyData

Specifies the property data. The data type and value returned vary depending on the property. For property information, see Properties.

Return Values

Returns EDS_ERR_OK on normal completion. Otherwise, see the [EDS Error Lists](#) for error codes.

See Also

- Related APIs
EdsGetPropertySize, EdsSetPropertyData, and EdsGetPropertyDesc
- For further information on properties, see Properties.

Note

Regarding retrieval of the camera property data in particular, the conditions that can be retrieved vary depending on the values of other property data. For further information, see Properties.

Example

- See [Sample 3](#).

3.1.19 EdsSetPropertyData

Description

Sets property data for the object designated in inRef.

Syntax

```
EdsError  EdsSetPropertyData (
    EdsBaseRef      inRef,
    EdsPropertyID   inPropertyID,
    EdsInt32        inParam,
    EdsUInt32       inPropertySize,
    const EdsVoid*   inPropertyData )
```

Parameters

inRef

Designate the object for which to set properties. Designate either EdsCameraRef or EdsImageRef.

inPropertyID

Revision History/Date	Corrections	Reviser	Remarks

Designate the property ID.

inParam

Designate additional property information. Use additional property information if multiple items of information such as picture styles can be set or retrieved for a property. For descriptions of values that can be designated for each property, see the description of inParam for EdsGetPropertyData.

inPropertySize

Designate the size of the property data in bytes. The data size of each property can be retrieved by means of EdsGetPropertySize.

inPropertyData

Designate the property data to set.

Return Values

Returns EDS_ERR_OK if successful. In other cases, see the [EDS Error Lists](#).

See Also

- Related APIs
EdsGetPropertySize, EdsGetPropertyData, and EdsGetPropertyDesc.
- For further information on properties, see Properties.

Note

- When you set properties of an image object (EdsImageRef), this API maintains the change internally.

Example

- See [Sample 5](#).

3.1.20 EdsGetPropertyDesc

Description

Gets a list of property data that can be set for the object designated in inRef, as well as maximum and minimum values.

This API is intended for only some shooting-related properties.

Be sure before executing **EdsSetPropertyData**, use this API to get the values that can be set for the following Properties.

Retrievable properties for settable data lists	Description
kEdsPropID_AEModeSelect	Shooting mode
kEdsPropID_MeteringMode	Metering mode
kEdsPropID_ISOSpeed	ISO speed
kEdsPropID_Av	Aperture value
kEdsPropID_Tv	Shutter speed
kEdsPropID_ExposureCompensation	Exposure compensation
kEdsPropID_ImageQuality	Image quality
kEdsPropID_WhiteBalance	White balance type
kEdsPropID_ColorTemperature	Color temperature
kEdsPropID_PictureStyle	PictureStyle type
kEdsPropID_DriveMode	Drive mode

Revision History/Date	Corrections	Reviser	Remarks

kEdsPropID_Evf_WhiteBalance	White balance of Evf
kEdsPropID_Evf_ColorTemperature	Color temperature of Evf
kEdsPropID_Evf_AFMode	AF mode of Evf
kEdsPropID_DC_Strobe	Strobe mode for model of PowerShot Series
kEdsPropID_DC_Zoom	Zoom step for model of PowerShot Series

Syntax

```

EdsError EdsGetPropertyDesc(
    EdsBaseRef      inRef,
    EdsPropertyID   inPropertyID,
    EdsPropertyDesc* outPropertyDesc )

```

Parameters

inRef

The target object. Designate EdsCameraRef.

inPropertyID

Designate a property ID.

outPropertyDesc

Specifies a pointer to the EdsPropertyDesc structure for getting a list of property data that can currently be set in the target object.

If the API return value is EDS_ERR_OK, a settable property data list of properties that can be set is specified, as retrieved from the target object.

The structure of the list of property data that can be set (**EdsPropertyDesc**) has the following constituent elements.

EdsPropertyDesc constituent elements	Type	Description
form	EdsInt32	Reserved (currently, always 0)
access	EdsAccess	Reserved (currently, always 0)
numElements	EdsInt32	Indicates the number of property data list elements stored in the PropDesc array.
propDesc	EdsInt32[]	A property data array. The meaning of PropDesc array elements varies depending on the property type.

Return Values

EDS_ERR_INVALID_PARAMETER is returned if a property ID is designated in inPropertyID that cannot be used with GetPropertyDesc.

Returns EDS_ERR_OK if successful. In other cases, see the [EDS Error Lists](#).

See Also

- Related APIs
EdsGetPropertySize, EdsGetPropertyData, EdsSetPropertyData, and EdsGetPropertyDesc
- For details on properties and the meaning of array elements that can be set in the data list, see the [Properties](#) section.
- For information on data types of the EDSDK, see "Data Types Used by the APIs" in the Appendix.

Revision History/Date	Corrections	Reviser	Remarks

Example

- See [Sample 4](#).

3.1.21 EdsDeleteDirectoryItem

Description

Deletes a camera folder or file.

If folders with subdirectories are designated, all files are deleted except protected files.

EdsDirectoryItem objects deleted by means of this API are implicitly released by the EDSDK. Thus, there is no need to release them by means of EdsRelease.

Syntax

EdsError **EdsDeleteDirectoryItem**(EdsDirectoryItemRef inDirItemRef)

Parameters

inDirItemRef

Designate the folder or file to delete.

Return Values

Returns EDS_ERR_OK if successful. In other cases, see the [EDS Error Lists](#).

See Also

- Related APIs
EdsSendCommand

Note

- Be careful when deleting files on the remote camera to avoid doing so when the camera is not in the right mode. Lock the UI, for example.

3.1.22 EdsFormatVolume

Description

Formats volumes of memory cards in a camera.

Syntax

EdsError **EdsFormatVolume** (EdsVolumeRef inVolumeRef)

Parameters

inVolumeRef

Designate the volume (memory card) to format.

Return Values

Returns EDS_ERR_OK if successful. In other cases, see the [EDS Error Lists](#).

See Also

- Related APIs
EdsGetVolumeInfo

Note

Revision History/Date		Corrections	Reviser	Remarks

- Be careful to avoid doing this when the camera is not in the right mode. Lock the UI, for example.

3.1.23 EdsGetAttribute

Description

Gets attributes of files on a camera.

Syntax

```
EdsError  EdsGetAttribute ( EdsDirectoryItemRef  inDirItemRef,
                           EdsFileAttributes      *outFileAttribute ) ;
```

Parameters

inDirItemRef

Designate the file object for which to get attributes.

outFileAttribute

Indicates the file attributes.

As for the file attributes, OR values of the value defined by enum EdsFileAttributes can be retrieved. Thus, when determining the file attributes, you must check if an attribute flag is set for target attributes.

Example: Determining the attribute value fileAttr, retrieved from a file object

```
if (kEdsFileAttribute_ReadOnly & fileAttr){
    // The file is read-only
}
```

Enum EdsFileAttributes <defined location>EDSDKTypes.h

Value	Description
kEdsFileAttribute_Normal	A standard file
kEdsFileAttribute_ReadOnly	Read-only
kEdsFileAttribute_Hidden	Hidden attribute
kEdsFileAttribute_System	System attribute
kEdsFileAttribute_Archive	Archive attribute

Return Values

Returns EDS_ERR_OK if successful. In other cases, see the [EDS Error Lists](#).

See Also

- Related APIs
EdsSetAttribute

3.1.24 EdsSetAttribute

Description

Changes attributes of files on a camera.

Syntax

```
EdsError  EdsSetAttribute ( EdsDirectoryItemRef  inDirItemRef,
                           EdsFileAttributes      inFileAttribute ) ;
```

Parameters

Revision History/Date	Corrections	Reviser	Remarks

inDirItemRef

Designate the file object for which to change attributes.

outFileAttribute

Indicates the file attributes.

As for the file attributes, OR values of the value defined by enum EdsFileAttributes can be retrieved.

Enum EdsFileAttribtes <defined location>EDSDKTypes.h

Value	Description
kEdsFileAttribute_Normal	A standard file
kEdsFileAttribute_ReadOnly	Read-only
kEdsFileAttribute_Hidden	Hidden attribute
kEdsFileAttribute_System	System attribute
kEdsFileAttribute_Archive	Archive attribute

Return Values

Returns EDS_ERR_OK if successful. In other cases, see the [EDS Error Lists](#).

See Also

- Related APIs
EdGetAttribute

3.1.25 EdsDownload

Description

Downloads a file on a remote camera (in the camera memory or on a memory card) to the host computer. The downloaded file is sent directly to a file stream created in advance.

When dividing the file being retrieved, call this API repeatedly. Also in this case, make the data block size a multiple of 512 (bytes), excluding the final block.

Syntax

```
EdsError  EdsDownload(
EdsDirectoryItemRef  inDirItemRef,
EdsUInt64            inReadSize,
EdsStreamRef         outStreamRef )
```

Parameters

inDirItemRef

Designate the file object in the camera to download.

inReadSize

Designate the size in bytes to download.

outStreamRef

Specifies the destination stream. The stream for downloading is created by means of EdsCreateFileStream, EdsCreateMemoryStream, or the like.

Return Values

Returns EDS_ERR_OK if successful. In other cases, see the [EDS Error Lists](#).

See Also

- Related APIs

Revision History/Date	Corrections	Reviser	Remarks

EdsDownloadComplete, EdsDownloadCancel, EdsDownloadThumbnail, EdsCreateFileStream, EdsCreateMemoryStream, and EdsSetProgressCallback

Note

- EdsDownload is an API that may be checked with a progress callback. Using EdsSetProgressCallback to register the callback function enables the progress to be retrieved as an event during file transfer.
- Immediately after this API is called, the EdsDownloadComplete API must be called to notify the camera that the file transfer is complete. Similarly, if the download is canceled, EdsDownloadCancel must be called.
- If this API abends, a communication error between the camera and host computer occurs. If so, release the resources allocated by the application and restore the initial mode.

Example

- See [Sample 6](#).

3.1.26 EdsDownloadComplete

Description

Must be called when downloading of directory items is complete. Executing this API makes the camera recognize that file transmission is complete.
This operation need not be executed when using EdsDownloadThumbnail.

Syntax

EdsError **EdsDownloadComplete(** **EdsDirectoryItemRef** **inDirItemRef** **)**

Parameters

inDirItemRef

Designate the file for which to complete the downloading process.

Return Values

Returns EDS_ERR_OK if successful. In other cases, see the [EDS Error Lists](#).

See Also

- Related APIs
EdsDownload and EdsDownloadCancel

Note

- If transfer of a file that was divided is canceled, call EdsDownloadCancel instead of this API to notify the camera that downloading of the directory item has been canceled.

Example

- See [Sample 6](#).

3.1.27 EdsDownloadCancel

Description

Must be executed when downloading of a directory item is canceled. Calling this API makes the camera cancel file transmission. It also releases resources.
This operation need not be executed when using EdsDownloadThumbnail.

Revision History/Date		Corrections	Reviser	Remarks

Syntax

EdsError **EdsDownloadCancel** (**EdsDirectoryItemRef** **inDirItemRef**)

Parameters

inDirItemRef

Designate the file for which to cancel downloading.

Return Values

Returns EDS_ERR_OK if successful. In other cases, see the [EDS Error Lists](#).

See Also

- Related APIs
EdsDownload and EdsDownloadComplete

Note

- In applications that take locally released images on the camera and load them on host computer, if the application receives a file transfer request from the camera when the file is not needed (by means of kEdsObjectEvent_DirItemRequestTransfer or kEdsObjectEvent_DirItemRequestTransferDT), this API must be called to notify the camera that transmission has been canceled.
Normally, delete callback function registration at the moment an event is not needed.

3.1.28 EdsDownloadThumbnail

Description

Extracts and downloads thumbnail information from image files in a camera.
Thumbnail information in the camera's image files is downloaded to the host computer. Downloaded thumbnails are sent directly to a file stream created in advance.

Syntax

EdsError **EdsDownloadThumbnail**(
 EdsDirectoryItemRef **inDirItemRef**,
 EdsStreamRef **outStreamRef**)

Parameters

inDirItemRef

Designate the image file object with thumbnails to extract.

outStreamRef

Designate the stream for saving extracted thumbnails.

Return Values

Returns EDS_ERR_OK if successful. In other cases, see the [EDS Error Lists](#).

See Also

- Related APIs
EdsDownload, EdsCreateFileStream, EdsCreateFileStreamEx, EdsCreateImageRef, and EdsGetImageInfo

3.1.29 EdsCreateEvflImageRef

Description

Creates an object used to get the live view image data set.

Revision History/Date		Corrections	Reviser	Remarks

Syntax

EdsError **EdsCreateEvfImageRef** (**EdsStream** **inStream**,
EdsEvfImageRef* **outEvfImage**)

Return Values

Returns EDS_ERR_OK if successful. In other cases, see the [EDS Error Lists](#).

See Also

- Related APIs
EdsCreateFileStream, EdsCreateFileStreamEx

Example

- See [Sample 10](#)

3.1.30 EdsDownloadEvfImage

Description

Downloads the live view image data set for a camera currently in live view mode.

Live view can be started by using the property ID:kEdsPropertyID_Evf_OutputDevice and data:EdsOutputDevice_PC to call EdsSetPropertyData.

In addition to image data, information such as zoom, focus position, and histogram data is included in the image data set. Image data is saved in a stream maintained by EdsEvfImageRef. EdsGetPropertyData can be used to get information such as the zoom, focus position, etc.

Although the information of the zoom and focus position can be obtained from EdsEvfImageRef, settings are applied to EdsCameraRef.

Syntax

EdsError **EdsDownloadEvfImage** (**EdsCameraRef** **outStream**
EdsEvfImageRef **outEvfImage**)

Return Values

Returns EDS_ERR_OK if successful. In other cases, see the [EDS Error Lists](#).

See Also

- Related APIs
EdsCreateEvfImageRef

Note

EDS_ERR_OBJECT_NOTREADY returns as an error when the image data set is not ready at the camera or when the image data set cannot be obtained.

Be sure to retry if EDS_ERR_OBJECT_NOTREADY is returned.

Example

- See [Sample 10](#)

Revision History/Date		Corrections	Reviser	Remarks

3.1.31 EdsCreateFileStream

Description

Creates a new file on a host computer (or opens an existing file) and creates a file stream for access to the file. If a new file is designated before executing this API, the file is actually created following the timing of writing by means of EdsWrite or the like with respect to an open stream.

Syntax

```
EdsError  EdsCreateFileStream (const EdsChar* inFileName,
                               EdsFileCreateDisposition inCreateDisposition,
                               EdsAccess inDesiredAccess, EdsStreamRef* outStream)
```

Parameters

inFileName

Designate the file name of a new file or a file to open.
You can designate a null-terminated string up to EDS_MAX_NAME characters long as the file name.

inCreateDisposition

Designate how the file is handled (that is, its disposition) if it exists or does not exist.
Designate a value defined in Enum EdsFileCreateDisposition.

Enum EdsFileCreateDisposition <defined location>EDSDKTypes.h

Value	Description
kEdsFileCreateDisposition_CreateNew	Creates a new file. An error occurs if the designated file already exists.
kEdsFileCreateDisposition_CreateAlways	Creates a new file. If the designated file already exists, that file is overwritten and existing attributes is erased.
kEdsFileCreateDisposition_OpenExisting	Opens a file. An error occurs if the designated file does not exist.
kEdsFileCreateDisposition_OpenAlways	If the file exists, it is opened. If the designated file does not exist, a new file is created.
kEdsFileCreateDisposition_TruncateExsisting	Opens a file and sets the file size to 0 bytes.

inDesiredAccess

Values defined in Enum EdsAccess may be designated.

Enum EdsAccess <defined location>EDSDKTypes.h

Value	Description
kEdsAccess_Read	Open a read-only stream.
kEdsAccess_Write	Open a write-only stream.
kEdsAccess_ReadWrite	Allow reading and writing.

outStreamRef

Returns a file stream to the open file.

Return Values

Returns EDS_ERR_OK if successful. In other cases, see the [EDS Error Lists](#).

See Also

- Related APIs

Revision History/Date	Corrections	Reviser	Remarks

EdsCreateFileStreamEx, EdsWrite, EdsRead, and EdsRelease

Note

- The maximum file name length is limited to EDS_MAX_NAME. To go beyond this limitation or enable support of Unicode file names, use the Unicode version, EdsCreateFileStreamEx.
- The stream you create must be released after use by means of EdsRelease.

Example

- See [Sample 6](#).

3.1.32 EdsCreateFileStreamEx

Description

An extended version of EdsCreateFileStream.
Use this function when working with Unicode file names.

Syntax

```

EdsError  EdsCreateFileStreamEx(
#ifdef  __MACOS__
    const  CFURLRef      inURL,
#else
    const  WCHAR*      inFileName,
#endif
    EdsFileCreateDisposition inCreateDisposition,
    EdsAccess inDesiredAccess, EdsStreamRef* outStream)

```

Parameters

inURL (for Macintosh)
Designate CFURLRef.
inFileName (for Windows)
Designate the file name.
inDesiredAccess
See EdsCreateFileStream.
inCreateDisposition
See EdsCreateFileStream.
outStreamRef
Returns a file stream to the open file.

Return Values

Returns EDS_ERR_OK if successful. In other cases, see the [EDS Error Lists](#).

See Also

- Related APIs
EdsCreateFileStream, EdsWrite, EdsRead, and EdsRelease

Note

- This API is an extended version of EdsCreateStreamFromFile.
- The stream you create must be released after use by means of EdsRelease.

Revision History/Date		Corrections	Reviser	Remarks

3.1.33 EdsCreateMemoryStream

Description

Creates a stream in the memory of a host computer.

In the case of writing in excess of the allocated buffer size, the memory is automatically extended.

Syntax

```
EdsError  EdsCreateMemoryStream ( EdsUInt64 inBufferSize,
                                EdsStreamRef* outStreamRef )
```

Parameters

inBufferSize

Designate the buffer size to allocate. Because the size will be extended automatically as needed, designate 0 if the buffer size is unknown.

outStreamRef

On normal completion, a pointer is specified to the stream object that was created.

Return Values

Returns EDS_ERR_OK if successful. In other cases, see the [EDS Error Lists](#).

See Also

EdsCreateFileStream, EdsWrite, EdsRead, and EdsRelease

Note

- The stream you create must be released after use by means of EdsRelease.

3.1.34 EdsCreateMemoryStreamFromPointer

Description

Creates a stream from the memory buffer you prepare. Unlike the buffer size of streams created by means of EdsCreateMemoryStream, the buffer size you prepare for streams created this way does not expand.

Syntax

```
EdsError  EDSAPI  EdsCreateMemoryStreamFromPointer (
                                EdsVoid          *inUserBuffer,
                                EdsUInt64        inBufferSize,
                                EdsStreamRef      *outStream
                                );
```

Parameters

inUserBuffer

Pointer to the buffer you have prepared. Streams created by means of this API lead to this buffer.

inBufferSize

Designate the buffer size.

outStream

On normal completion, returns the stream to the designated buffer. Designate the reference to the EdsStreamRef type variable (that is, the address) as an argument.

Return Values

Returns EDS_ERR_OK if successful. In other cases, see the [EDS Error Lists](#).

Revision History/Date		Corrections	Reviser	Remarks

See Also

- Related APIs
EdsCreateMemoryStream, EdsCreateFileStream, EdsCreateFileStreamEx, EdsWrite, and EdsRelease

Note

- The size of streams created by means of this API does not change. Be careful to ensure that access to the created stream does not exceed the available space.

3.1.35 EdsGetPointer

Description

Gets the pointer to the start address of memory managed by the memory stream.
As the EDSDK automatically resizes the buffer, the memory stream provides you with the same access methods as for the file stream. If access is attempted that is excessive with regard to the buffer size for the stream, data before the required buffer size is allocated is copied internally, and new writing occurs. Thus, the buffer pointer might be switched on an unknown timing. Caution in use is therefore advised.

Syntax

```
EdsError EDSAPI EdsGetPointer(  
                                EdsStreamRef inStream,  
                                EdsVoid      **outPointer  
                                );
```

Parameters

inStream

Designate the memory stream for the pointer to retrieve.

outPointer

If successful, returns the pointer to the buffer written in the memory stream.

Return Values

Returns EDS_ERR_OK if successful. In other cases, see the [EDS Error Lists](#).

See Also

- Related APIs
EdsCreateMemoryStream, EdsCreateFileStream, EdsCreateFileStreamEx, EdsWrite, and EdsRelease

Note

- The buffer pointer may be switched on an unknown timing. Thus, some risk is posed by using this API so that saved pointers are saved and used in alternation. Caution in use is therefore advised.

3.1.36 EdsRead

Description

Reads data the size of inReadSize into the outBuffer buffer, starting at the current read or write position of the stream. The size of data actually read can be designated in outReadSize.

Syntax

```
EdsError EdsRead(  
                EdsStreamRef inStreamRef,  
                EdsUInt64    inReadSize,
```

Revision History/Date	Corrections	Reviser	Remarks

EdsVoid
EdsUInt64 ***outBuffer,**
 ***outReadSize**)

Parameters

inStreamRef

Designate the file or memory stream.

inReadSize

Designate the size of data to read.

outBuffer

On normal completion, specifies the buffer storing read data.

outReadSize

Specifies a pointer to the variable for receiving the size of data actually read.

Return Values

Returns EDS_ERR_OK if successful. In other cases, see the [EDS Error Lists](#).

See Also

- Related APIs

EdsCreateMemoryStream, EdsCreateFileStream, EdsCreateFileStreamEx, EdsWrite, and EdsRelease

Note

- If reading is successful, the read or write position in the stream is moved ahead an amount corresponding to the size of data read.

3.1.37 EdsWrite

Description

Writes data of a designated buffer to the current read or write position of the stream.

Syntax

EdsError **EdsWrite**(**EdsStreamRef** **inStreamRef**, **EdsUInt64** **inWriteSize**,
 Const **EdsVoid*** **inBuffer**, **EdsUInt64** ***outWrittenSize**)

Parameters

inStreamRef

Designate the destination stream for writing. The stream object must be retrieved in advance.

inWriteSize

Designate the size of data to write from the buffer.

inBuffer

Designate a pointer to the data to write.

outWrittenSize

Specifies a pointer to the variable for receiving the size of data actually written.

Return Values

Returns EDS_ERR_OK if successful. In other cases, see the [EDS Error Lists](#).

See Also

- Related APIs

EdsCreateMemoryStream, EdsCreateFileStream, EdsCreateFileStreamEx, EdsRead, and EdsRelease

Note

Revision History/Date		Corrections	Reviser	Remarks

- If writing is successful, the read or write position in the stream is moved ahead an amount corresponding to the size of data written.

3.1.38 EdsSeek

Description

Moves the read or write position of the stream (that is, the file position indicator).

Syntax

```
EdsError EdsSeek( EdsStreamRef inStreamRef, EdsInt64 inSeekOffset,
                  EdsSeekOrigin inSeekOrigin )
```

Parameters

inStreamRef

Designate the stream object for this operation.

inSeekOffset

Designate the number of bytes to move the file position indicator.

inSeekOrigin

Designate the origin for moving from the read or write position. Designate any of the following, as defined in enum EdsSeekOrigin.

Enum EdsSeekOrigin <defined location>EDSDKTypes.h

InSeekOrigin	Description
kEdsSeek_Begin	Moves the file position indicator from the beginning of the stream forward by inOffset bytes.
kEdsSeek_Cur	Moves the file position indicator from the current position in the stream forward by inOffset bytes.
kEdsSeek_End	Moves the file position indicator from the end of the stream by inOffset bytes. To move toward the beginning, designate a negative value. Positive values will move the indicator beyond the end of the file.

Return Values

Returns EDS_ERR_OK if successful. In other cases, see the [EDS Error Lists](#).

See Also

- Related APIs
EdsCreateMemoryStream, EdsCreateFileStream, EdsCreateFileStreamEx, EdsRead, and EdsWrite

3.1.39 EdsGetPosition

Description

Gets the current read or write position of the stream (that is, the file position indicator).

Syntax

```
EdsError EdsGetPosition( EdsStreamRef inStreamRef, EdsUInt64* outPosition )
```

Parameters

Revision History/Date	Corrections	Reviser	Remarks

inStreamRef

Designate the destination stream for getting the position.

outPosition

On normal completion, specifies a pointer to the variable for receiving the current read or write position of the stream (that is, to the offset position from the beginning of the stream). (The beginning of the stream is 0.)

Return Values

Returns EDS_ERR_OK if successful. In other cases, see the [EDS Error Lists](#).

See Also

- Related APIs
EdsCreateMemoryStream, EdsCreateFileStream, EdsCreateFileStreamEx, EdsRead, EdsWrite, and EdsSeek

Note

- The stream's initial read or write position is 0. If EdsWrite or EdsRead is used to write or read from the stream, the indicator is moved an amount corresponding to that size in the positive direction.
- When intentionally changing the read or write position of the stream, use EdsSeek.

3.1.40 EdsGetLength

Description

Gets the stream size.

Syntax

```
EdsError EdsGetLength( EdsStreamRef inStreamRef, EdsUInt64 *outLength )
```

Parameters

inStreamRef

Designate the stream object for this operation.

outLength

Specifies the pointer to the variable for receiving the number of bytes of the stream.

Return Values

Returns EDS_ERR_OK if successful. In other cases, see the [EDS Error Lists](#).

See Also

- Related APIs
EdsCreateMemoryStream, EdsCreateFileStream, and EdsCreateFileStreamEx

3.1.41 EdsCopyData

Description

Copies data from the copy source stream to the copy destination stream.

The read or write position of the data to copy is determined from the current file read or write position of the respective stream.

After this API is executed, the read or write positions of the copy source and copy destination streams are moved an amount corresponding to inWriteSize in the positive direction.

Revision History/Date		Corrections	Reviser	Remarks

Syntax

```
EdsError  EdsCopyData(
    EdsStreamRef inStreamRef, EdsUInt64 inWriteSize,
    EdsStreamRef outStreamRef)
```

Parameters

inStreamRef

Designate the source stream for copying.

inWriteSize

Designate the number of bytes to copy .

outStreamRef

Designate the destination stream for copying.

Return Values

Returns EDS_ERR_OK if successful. In other cases, see the [EDS Error Lists](#).

See Also

- Related APIs
EdsCreateMemoryStream, EdsCreateFileStream, EdsCreateFileStreamEx, EdsRead, EdsWrite, EdsSeek, and EdsGetPosition

3.1.42 EdsCreateImageRef

Description

Creates an image object from an image file.

Without modification, stream objects cannot be worked with as images. Thus, when extracting images from image files, you must use this API to create image objects.

The image object created this way can be used to get image information (such as the height and width, number of color components, and resolution), thumbnail image data, and the image data itself.

Syntax

```
EdsError  EdsCreateImageRef(  EdsStreamRef  inStreamRef,
                               EdsImageRef  *outImageRef  )
```

Parameters

inStreamRef

Designate the image file (or image data in the memory stream).

outImageRef

Specifies the pointer to the variable for receiving the image object.

Return Values

Returns EDS_ERR_OK if successful. In other cases, see the [EDS Error Lists](#).

See Also

- Related APIs
EdsCreateStream, EdsGetImageInfo, and EdsGetImage, EdsRelease

3.1.43 EdsGetImageInfo

Description

Gets image information from a designated image object.

Revision History/Date		Corrections	Reviser	Remarks

Here, image information means the image width and height, number of color components, resolution, and effective image area.

Syntax

```
EdsError EdsGetImageInfo(
    EdsImageRef inImageRef, EdsImageSource inImageSource,
    EdsImageInfo* outImageInfo )
```

Parameters

inStreamRef

Designate the object for which to get image information.

inImageSource

Of the various image data items in the image file, designate the type of image data representing the information you want to get. Designate the image as defined in Enum EdsImageSource.

Enum EdsImageSource <defined location>EDSDKTypes.h

Value	Description
kEdsImageSrc_FullView	The image itself (a full-sized image)
kEdsImageSrc_Thumbnail	A thumbnail image
kEdsImageSrc_Preview	A preview image

outImageInfo

Stores the image data information designated in inImageSource.

EdsImageInfo constituent elements	Type	Description
width	EdsUInt32	Width (in pixels)
height	EdsUInt32	Height (in pixels)
numOfComponents	EdsUInt32	Number of color components
componentDepth	EdsUInt32	Resolution (8-bit or 16-bit) Note: Image files may contain image data of mixed resolutions.
effectiveRect	EdsRect	Effective image area (This means the area excluding the black bands on the top and bottom of the thumbnail image.)
Reserved	EdsUInt32	Reserved

Return Values

Returns EDS_ERR_OK if successful. In other cases, see the [EDS Error Lists](#).

See Also

- Related APIs
EdsCreateImageRef and EdsGetImage
- For information on data types of the EDSDK, see "Data Types Used by the APIs" in the Appendix.

3.1.44 EdsGetImage

Description

Gets designated image data from an image file, in the form of a designated rectangle.

Returns uncompressed results for JPEG compressed images and processed results in the designated pixel order

Revision History/Date	Corrections	Reviser	Remarks

(RGB, Top-down BGR, and so on) for RAW images. Additionally, by designating the input/output rectangle, it is possible to get reduced, enlarged, or partial images. However, because images corresponding to the designated output rectangle are always returned by the SDK, the SDK does not take the aspect ratio into account. To maintain the aspect ratio, you must keep the aspect ratio in mind when designating the rectangle.

Syntax

```
EdsError EdsGetImage(
    EdsImageRef      inImageRef,
    EdsImageSource    inImageSource,
    EdsTargetImageType inImageType,
    EdsRect           inSrcRect,
    EdsSize           inDstSize,
    EdsStreamRef      outStreamRef
);
```

Parameters

inImageRef

Designate the image object for which to get the image data.

inImageSource

Designate the type of image data to get from the image file (thumbnail, preview, and so on).

Designate values as defined in Enum EdsImageSource.

Enum EdsImageSource <defined location>EDSDKTypes.h

Value	Description
kEdsImageSrc_FullView	The image itself (a full-sized image)
kEdsImageSrc_Thumbnail	A thumbnail image
kEdsImageSrc_Preview	A preview image (displayed on the back screen of the camera)

inImageType

Designate the output image type. Because the output format of EdsGetImage may only be RGB, only

kEdsTargetImageType_RGB or **kEdsTargetImageType_RGB16** can be designated.

However, image types exceeding the resolution of inImageSource cannot be designated.

Example: Suppose the source image resolution (componentDepth) retrieved by means of **EdsGetImageInfo()** is 8 bits

→ The resolution that can be retrieved by means of EdsGetImage () is also 8 bits

→ Thus, only **kEdsTargetImageType_RGB** is available.

EdsTargetImageType <defined location>EDSDKTypes.h

Value	Description
kEdsTargetImageType_RGB	8-bit RGB, chunky format
kEdsTargetImageType_RGB16	16-bit RGB, chunky format

inSrcRect

Designate the coordinates and size of the rectangle to be retrieved (processed) from the source image.

inDstSize

Designate the rectangle size for output.

outStreamRef

Designate the memory or file stream for output of the image.

Revision History/Date	Corrections	Reviser	Remarks

Return Values

Returns EDS_ERR_OK if successful. In other cases, see the [EDS Error Lists](#).

See Also

- Related APIs
EdsCreateImageRef and EdsGetImageInfo

Note

- To maintain the aspect ratio, you must keep the aspect ratio in mind when designating a rectangle.
- In calculating the data size of the output file, the original image data resolution is not used. Instead, the resolution of the image type designated by inImageType is used. For example, the calculation for kEdsTargetImageType_RGB is 3 (R, G, and B) x 8 (resolution) x width x height ÷ 8 (bytes). Similarly, kEdsTargetImageType_RGB16 is calculated by 3 x 16 x width x height ÷ 8 (bytes).

3.1.45 EdsSetCameraAddedHandler

Description

Registers a callback function for when a camera is detected.

Syntax

```
EdsError  EdsSetCameraAddedHandler (
    EdsCameraAddedHandler inCameraAddedHandler,
    EdsVoid*  inContext )
```

Parameters

inCameraAddedHandler

Designate the pointer to the callback function called when a camera is detected.
You must implement the callback function registered this way following a prescribed type definition.
The callback function type is defined as follows.

Syntax

```
typedef  EdsError
    (EDSCALLBACK * EdsCameraAddedHandler)(EdsVoid *inContext )
```

Parameters

inContext

Passes data for the application designated by **EdsSetCameraAddedHandler**.

Return Values

Returns EDS_ERR_OK if successful. Otherwise, ensure the implementation returns an appropriate error code. (See the [EDS Error Lists](#)).

inContext

Designate application information to be passed by means of the callback function. Any data needed for your application can be passed.
In multithreaded environments, the callback function is executed by a thread exclusively for the event. Use it appropriately, as in designating the this pointer to pass data to UI threads.
Designate a NULL pointer if it is not needed.

Revision History/Date		Corrections	Reviser	Remarks

Return Values

Returns EDS_ERR_OK if successful. In other cases, see the [EDS Error Lists](#).

See Also

- Related APIs
EdsSetPropertyEventHandler, EdsSetObjectEventHandler, EdsSetCameraStateEventHandler, and EdsSetProgressCallback

3.1.46 EdsSetObjectEventHandler

Description

Registers a callback function for receiving status change notification events for objects on a remote camera. Here, object means volumes representing memory cards, files and directories, and shot images stored in memory, in particular.

Syntax

```
EdsError  EdsSetObjectEventHandler(  EdsCameraRef  inCameraRef,
                                     EdsObjectEvent  inEvent,
                                     EdsObjectEventHandler  inObjectEventHandler,
                                     EdsVoid          *inContext  )
```

Parameters

inCameraRef

Designate the camera object.

inEvent

Designate one or all events to be supplemented. To designate all events, use kEdsObjectEvent_All. For details on events that can be designated, refer to the section on object-related events in the event lists of [Asynchronous Events](#).

inObjectEventHandler

Designate the pointer to the callback function for receiving object-related camera events. The callback function registered here is called by the EDSDK when the event is received.
To cancel supplementation of the event designated in the event type, designate NULL in this argument. You must implement the callback function registered this way following a prescribed type definition. The callback function type for object-related events is defined as follows.

Syntax

```
typedef EdsError  ( EDSCALLBACK *EdsObjectEventHandler)(
                                     EdsObjectEvent  inEvent,
                                     EdsBaseRef        inRef,
                                     EdsVoid          *inContext) ;
```

Parameters

inEvent

Indicate the event type supplemented. Designate one of the event types for supplementation, as designated by EdsSetObjectEventHandler. Events that occur can be determined based on the event type.

inRef

Returns a reference to objects created by the event.

Revision History/Date	Corrections	Reviser	Remarks

inContext

Passes inContext without modification, as designated as an **EdsSetObjectEventHandler** argument.

Return Values

Returns EDS_ERR_OK if successful. In other cases, see the [EDS Error Lists](#).

inContext

Designate application information to be passed by means of the callback function. Any data needed for your application can be passed.

In multithreaded environments, the callback function is executed by a thread exclusively for the event. Use it appropriately, as in designating the this pointer to pass data to UI threads. Designate a NULL pointer if it is not needed.

Return Values

Returns EDS_ERR_OK if successful. In other cases, see the [EDS Error Lists](#).

See Also

- Related APIs
EdsSetCameraAddedHandler, EdsSetPropertyEventHandler, EdsSetCameraStateEventHandler, and EdsSetProgressCallback
- For details on asynchronous events, refer to "Overview" and "Asynchronous Events."

Note

- To release the event handler for events of the designated type, designate NULL in the argument of inObjectEventHandler. (The event will not occur.)

Example

- See [Sample 1](#).

3.1.47 EdsSetPropertyEventHandler

Description

Registers a callback function for receiving status change notification events for property states on a camera.

Syntax

```
EdsError EdsSetPropertyEventHandler(
    EdsCameraRef
    EdsPropertyEvent
    EdsPropertyEventHandler
    EdsVoid*
    inCameraRef,
    inEvnet,
    inPropertyEventHandler,
    inContext );
```

Parameters

inCameraRef

Designate the camera object.

inEvent

Designate one or all events to be supplemented. To designate all events, use kEdsPropertyEvent_All.

For details on events that can be designated, refer to the section on property-related events in the event lists of [Asynchronous Events](#).

inPropertyEventHandler

Designate the pointer to the callback function for receiving property-related camera events. The callback

Revision History/Date	Corrections	Reviser	Remarks

function registered here is called by the EDSDK when the event is received.
To cancel supplementation of the event designated in the event type, designate NULL in this argument.
You must implement the callback function registered this way following a prescribed type definition.
The callback function type for property-related events is defined as follows.

Syntax

```
typedef EdsError ( EDSCALLBACK * EdsPropertyEventHandler )(
    EdsPropertyEvent    inEvent,
    EdsPropertyID       inPropertyID,
    EdsUInt32           inParam,
    EdsVoid              *inContext );
```

Parameters

inEvent

Indicate the event type supplemented. Designate one of the event types subject to supplementation, as designated by EdsSetPropertyEventHandler. Events that occur can be determined based on the event type.

inPropertyID

Returns the property ID created by the event.

inParam

Used to identify information created by the event for custom function (CF) properties or other properties that have multiple items of information.

inContext

Passes inContext without modification, as designated as an **EdsSetPropertyEventHandler** argument.

Return Values

Returns EDS_ERR_OK if successful. In other cases, see the [EDS Error Lists](#).

inContext

Designate application information to be passed by means of the callback function. Any data needed for your application can be passed.

In multithreaded environments, the callback function is executed by a thread exclusively for the event. Use it appropriately, as in designating the this pointer to pass data to UI threads. Designate a NULL pointer if it is not needed.

Return Values

Returns EDS_ERR_OK if successful. In other cases, see the [EDS Error Lists](#).

See Also

- Related APIs
EdsSetCameraAddedHandler, EdsObjectEventHandler, EdsSetCameraStateEventHandler, and EdsSetProgressCallback
- For details on asynchronous events, refer to "Overview" and "Asynchronous Events."

Note

- To release the event handler for events of the designated type, designate NULL in the argument of inPropertyEventHandler. (The event will not occur.)

Example

- See [Sample 1](#).

Revision History/Date		Corrections	Reviser	Remarks

3.1.48 EdsSetCameraStateEventHandler

Description

Registers a callback function for receiving status change notification events for camera objects.

Syntax

```
EdsError EdsSetCameraStateEventHandler(
    EdsCameraRef      inCameraRef,
    EdsStateEvent      inEvent,
    EdsStateEventHandler inStateEventHandler,
    EdsVoid*           inContext );
```

Parameters

inCameraRef

Designate the camera object.

inEvent

Designate one or all events to be supplemented. To designate all events, use `kEdsStateEvent_All`.

For details on events that can be designated, refer to the section on events related to camera states in the event lists of [Asynchronous Events](#).

inStateEventHandler

Designate the pointer to the callback function for receiving events related to camera object states. The callback function registered here is called by the EDSDK when the event is received.

To cancel supplementation of the event designated in the event type, designate NULL in this argument.

You must implement the callback function registered this way following a prescribed type definition.

The callback function type for events related to camera states is defined as follows.

Syntax

```
typedef EdsError ( EDSCALLBACK *EdsStateEventHandler )(
    EdsStateEvent      inEvent,
    EdsUInt32          inEventData,
    EdsVoid             *inContext );
```

Parameters

inEvent

Indicate the event type supplemented. Designate one of the event types subject to supplementation, as designated by `EdsSetPropertyEventHandler`. Events that occur can be determined based on the event type.

inEventData

Pointer to the event data. The content designated here varies depending on the property type. For details, see [Property Details](#).

inContext

Passes `inContext` without modification, as designated as an `EdsSetCameraStateEventHandler` argument.

Return Values

Returns `EDS_ERR_OK` if successful. In other cases, see the [EDS Error Lists](#).

inContext

Revision History/Date	Corrections	Reviser	Remarks

Designate application information to be passed by means of the callback function. Any data needed for your application can be passed.

In multithreaded environments, the callback function is executed by a thread exclusively for the event. Use it appropriately, as in designating the this pointer to pass data to UI threads. Designate a NULL pointer if it is not needed.

Return Values

Returns EDS_ERR_OK if successful. In other cases, see the [EDS Error Lists](#).

See Also

- Related APIs
EdsSetCameraAddedHandler, EdsObjectEventHandler, EdsSetObjectEventHandler, and EdsSetProgressCallback
- For details on asynchronous events, refer to "Overview" and "Asynchronous Events."

Note

- To release the event handler for events of the designated type, designate NULL in the argument of inStateEventHandler. (The event will not occur.)

3.1.49 EdsSetProgressCallback

Description

Register a progress callback function.

An event is received as notification of progress during processing that takes a relatively long time, such as downloading files from a remote camera. If you register the callback function, the EDSDK calls the callback function during execution or on completion of the following APIs. This timing can be used in updating on-screen progress bars, for example.

APIs for which the progress callback function is valid
EdsCopyData
EdsDownload
EdsGetImage

Syntax

```
EdsError EdsSetProgressCallback(
    EdsBaseRef
    EdsProgressFunc
    EdsProgressOption
    EdsVoid*
    inRef,
    inProgressCallback,
    inProgressOption,
    inContext)
```

Parameters

inRef

Designate the relevant object.

EdsImageRef or EdsStreamRef are the objects of APIs for which progress callback registration is valid.

inProgressCallback

Designate a pointer to the progress callback function.

The progress callback function type is defined as follows.

Syntax

Revision History/Date	Corrections	Reviser	Remarks

```
typedef  EdsError( EDSCALLBACK * EdsProgressCallback )(
                                EdsUInt32      inPercent,
                                EdsVoid         *inContext,
                                EdsBool         *outCancel )
```

Parameters

inPercent

Indicates the progress in a range of 0 –100%. Value range: 0 to 100

inContext

The application information designated by EdsSetProgressCallback.

outCancel

To cancel processing in progress, set this variable to TRUE.

For example, if this argument is set to TRUE during file transfer from the camera, the EDSDK notifies the camera that file transfer has been canceled, and transfer of those files is canceled.

Return Values

Returns EDS_ERR_OK if successful. In other cases, see the [EDS Error Lists](#).

inProgressOption

Options when this callback function is called are defined in Enum EdsProgressOption.

Enum EdsProgressOption <defined location>EDSDKTypes.h

Value	Description
kEdsProgressOption_NoReport	Do not call a progress callback function.
kEdsProgressOption_Done	Call a progress callback function when the progress reaches 100%.
kEdsProgressOption_Periodically	Call a progress callback function periodically.

inContext

Application information, passed in the argument when the callback function is called. Any information required for your program may be added.

Return Values

Returns EDS_ERR_OK if successful. In other cases, see the [EDS Error Lists](#).

See Also

- Related APIs
EdsSetCameraAddedHandler and EdsSetObjectEventHandler

Note

- To release the event handler for events of the designated type, designate NULL in the argument of inStateEventHandler. (The event will not occur.)

Revision History/Date	Corrections	Reviser	Remarks

3.2 EDS Error Lists

As return values, EDS SDK APIs return error codes defined as follows.

For each API, the return values mainly used are identified based on API characteristics. However, the principal factors that actually caused the problems are specified as error codes. Thus, all error codes may be specified in return values.

3.2.1 General errors

Error Type	Notes
EDS_ERR_UNIMPLEMENTED	Not implemented
EDS_ERR_INTERNAL_ERROR	Internal error
EDS_ERR_MEM_ALLOC_FAILED	Memory allocation error
EDS_ERR_MEM_FREE_FAILED	Memory release error
EDS_ERR_OPERATION_CANCELLED	Operation canceled
EDS_ERR_INCOMPATIBLE_VERSION	Version error
EDS_ERR_NOT_SUPPORTED	Not supported
EDS_ERR_UNEXPECTED_EXCEPTION	Unexpected exception
EDS_ERR_PROTECTION_VIOLATION	Protection violation
EDS_ERR_MISSING_SUBCOMPONENT	Missing subcomponent
EDS_ERR_SELECTION_UNAVAILABLE	Selection unavailable

3.2.2 File access errors

Error Type	Notes
EDS_ERR_FILE_IO_ERROR	IO error
EDS_ERR_FILE_TOO_MANY_OPEN	Too many files open
EDS_ERR_FILE_NOT_FOUND	File does not exist
EDS_ERR_FILE_OPEN_ERROR	Open error
EDS_ERR_FILE_CLOSE_ERROR	Close error
EDS_ERR_FILE_SEEK_ERROR	Seek error
EDS_ERR_FILE_TELL_ERROR	Tell error
EDS_ERR_FILE_READ_ERROR	Read error
EDS_ERR_FILE_WRITE_ERROR	Write error
EDS_ERR_FILE_PERMISSION_ERROR	Permission error
EDS_ERR_FILE_DISK_FULL_ERROR	Disk full
EDS_ERR_FILE_ALREADY_EXISTS	File already exists
EDS_ERR_FILE_FORMAT_UNRECOGNIZED	Format error
EDS_ERR_FILE_DATA_CORRUPT	Invalid data
EDS_ERR_FILE_NAMING_NA	File naming error

3.2.3 Directory errors

Error Type	Notes
EDS_ERR_DIR_NOT_FOUND	Directory does not exist
EDS_ERR_DIR_IO_ERROR	I/O error
EDS_ERR_DIR_ENTRY_NOT_FOUND	No file in directory
EDS_ERR_DIR_ENTRY_EXISTS	File in directory
EDS_ERR_DIR_NOT_EMPTY	Directory full

Revision History/Date	Corrections	Reviser	Remarks

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3.2.4 Property errors

Error Type	Notes
EDS_ERR_PROPERTIES_UNAVAILABLE	Property (and additional property information) unavailable
EDS_ERR_PROPERTIES_MISMATCH	Property mismatch
EDS_ERR_PROPERTIES_NOT_LOADED	Property not loaded

3.2.5 Function parameter errors

Error Type	Notes
EDS_ERR_INVALID_PARAMETER	Invalid function parameter
EDS_ERR_INVALID_HANDLE	Handle error
EDS_ERR_INVALID_POINTER	Pointer error
EDS_ERR_INVALID_INDEX	Index error
EDS_ERR_INVALID_LENGTH	Length error
EDS_ERR_INVALID_FN_POINTER	FN pointer error
EDS_ERR_INVALID_SORT_FN	Sort FN error

3.2.6 Device errors

Error Type	Notes
EDS_ERR_DEVICE_NOT_FOUND	Device not found
EDS_ERR_DEVICE_BUSY	Device busy Note: If a device busy error occurs, reissue the command after a while. The camera will become unstable.
EDS_ERR_DEVICE_INVALID	Device error
EDS_ERR_DEVICE_EMERGENCY	Device emergency
EDS_ERR_DEVICE_MEMORY_FULL	Device memory full
EDS_ERR_DEVICE_INTERNAL_ERROR	Internal device error
EDS_ERR_DEVICE_INVALID_PARAMETER	Device parameter invalid
EDS_ERR_DEVICE_NO_DISK	No disk
EDS_ERR_DEVICE_DISK_ERROR	Disk error
EDS_ERR_DEVICE_CF_GATE_CHANGED	The CF gate has been changed
EDS_ERR_DEVICE_DIAL_CHANGED	The dial has been changed
EDS_ERR_DEVICE_NOT_INSTALLED	Device not installed
EDS_ERR_DEVICE_STAY_AWAKE	Device connected in awake mode
EDS_ERR_DEVICE_NOT_RELEASED	Device not released

3.2.7 Stream errors

Error Type	Notes
EDS_ERR_STREAM_IO_ERROR	Stream I/O error
EDS_ERR_STREAM_NOT_OPEN	Stream open error
EDS_ERR_STREAM_ALREADY_OPEN	Stream already open

Revision History/Date	Corrections	Reviser	Remarks

EDS_ERR_STREAM_OPEN_ERROR	Failed to open stream
EDS_ERR_STREAM_CLOSE_ERROR	Failed to close stream
EDS_ERR_STREAM_SEEK_ERROR	Stream seek error
EDS_ERR_STREAM_TELL_ERROR	Stream tell error
EDS_ERR_STREAM_READ_ERROR	Failed to read stream
EDS_ERR_STREAM_WRITE_ERROR	Failed to write stream
EDS_ERR_STREAM_PERMISSION_ERROR	Permission error
EDS_ERR_STREAM_COULDNT_BEGIN_TH_READ	Could not start reading thumbnail
EDS_ERR_STREAM_BAD_OPTIONS	Invalid stream option
EDS_ERR_STREAM_END_OF_STREAM	Invalid stream termination

3.2.8 Communication errors

Error Type	Notes
EDS_ERR_COMM_PORT_IS_IN_USE	Port in use
EDS_ERR_COMM_DISCONNECTED	Port disconnected
EDS_ERR_COMM_DEVICE_INCOMPATIBLE	Incompatible device
EDS_ERR_COMM_BUFFER_FULL	Buffer full
EDS_ERR_COMM_USB_BUS_ERR	USB bus error

3.2.9 Camera UI lock/unlock errors

Error Type	Notes
EDS_ERR_USB_DEVICE_LOCK_ERROR	Failed to lock the UI
EDS_ERR_USB_DEVICE_UNLOCK_ERROR	Failed to unlock the UI

3.2.10 STI/WIA errors

Error Type	Notes
EDS_ERR_STI_UNKNOWN_ERROR	Unknown STI
EDS_ERR_STI_INTERNAL_ERROR	Internal STI error
EDS_ERR_STI_DEVICE_CREATE_ERROR	Device creation error
EDS_ERR_STI_DEVICE_RELEASE_ERROR	Device release error
EDS_ERR_DEVICE_NOT_LAUNCHED	Device startup failed

3.2.11 Other general error

Error Type	Notes
EDS_ERR_ENUM_NA	Enumeration terminated (there was no suitable enumeration item)
EDS_ERR_INVALID_FN_CALL	Called in a mode when the function could not be used
EDS_ERR_HANDLE_NOT_FOUND	Handle not found
EDS_ERR_INVALID_ID	Invalid ID
EDS_ERR_WAIT_TIMEOUT_ERROR	Timeout
EDS_ERR_LAST_GENERIC_ERROR_PLUS_ONE	Not used.

Revision History/Date	Corrections	Reviser	Remarks

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3.2.12 PTP errors

Error Type	Notes
EDS_ERR_SESSION_NOT_OPEN	Session open error
EDS_ERR_INVALID_TRANSACTIONID	Invalid transaction ID
EDS_ERR_INCOMPLETE_TRANSFER	Transfer problem
EDS_ERR_INVALID_STRAGEID	Storage error
EDS_ERR_DEVICEPROP_NOT_SUPPORTED	Unsupported device property
EDS_ERR_INVALID_OBJECTFORMATCODE	Invalid object format code
EDS_ERR_SELF_TEST_FAILED	Failed self-diagnosis
EDS_ERR_PARTIAL_DELETION	Failed in partial deletion
EDS_ERR_SPECIFICATION_BY_FORMAT_UNSUPPORTED	Unsupported format specification
EDS_ERR_NO_VALID_OBJECTINFO	Invalid object information
EDS_ERR_INVALID_CODE_FORMAT	Invalid code format
EDS_ERR_UNKNOWN_VENDOR_CODE	Unknown vendor code
EDS_ERR_CAPTURE_ALREADY_TERMINATED	Capture already terminated
EDS_ERR_INVALID_PARENTOBJECT	Invalid parent object
EDS_ERR_INVALID_DEVICEPROP_FORMAT	Invalid property format
EDS_ERR_INVALID_DEVICEPROP_VALUE	Invalid property value
EDS_ERR_SESSION_ALREADY_OPEN	Session already open
EDS_ERR_TRANSACTION_CANCELLED	Transaction canceled
EDS_ERR_SPECIFICATION_OF_DESTINATION_UNSUPPORTED	Unsupported destination specification
EDS_ERR_UNKNOWN_COMMAND	Unknown command
EDS_ERR_OPERATION_REFUSED	Operation refused
EDS_ERR_LENS_COVER_CLOSE	Lens cover closed
EDS_ERR_OBJECT_NOTREADY	Image data set not ready for live view

3.2.13 TakePicture errors

Error Type	Notes
EDS_ERR_TAKE_PICTURE_AF_NG	Focus failed
EDS_ERR_TAKE_PICTURE_RESERVED	Reserved
EDS_ERR_TAKE_PICTURE_MIRROR_UP_NG	Currently configuring mirror up
EDS_ERR_TAKE_PICTURE_SENSOR_CLEANING_NG	Currently cleaning sensor
EDS_ERR_TAKE_PICTURE_SILENCE_NG	Currently performing silent operations
EDS_ERR_TAKE_PICTURE_NO_CARD_NG	Card not installed
EDS_ERR_TAKE_PICTURE_CARD_NG	Error writing to card
EDS_ERR_TAKE_PICTURE_CARD_PROTECT_NG	Card write protected

Revision History/Date	Corrections	Reviser	Remarks

4. Asynchronous Events

In the case of asynchronous events, notify the host computer of changes, such as changes in the state of properties of remote cameras.

To enable an application to receive issued events, you must prepare callback functions for event reception and register them in the EDSDK by means of `EdsSetPropertyEventHandler`, `EdsSetObjectEventHandler`, `EdsSetCameraStateEventHandler`, `EdsSetCameraAddedHandler`, `EdsSetProgressCallback`, or other APIs for configuring callback functions.

For details on callback function types, see the parameters information of the APIs for callback function configuration.

This section describes events that can be retrieved by callback functions registered using `EdsSetPropertyEventHandler`, `EdsSetObjectEventHandler`, and `EdsSetCameraStateEventHandler` in particular.

4.1 Event Lists

4.1.1 Object-related events

Events
Notification of file creation
Notification of file deletion
Notification of changes in file information
Notification of changes in the volume information of recording media
Notification of requests to update volume information
Notification of requests to update folder information
Notification of file transfer requests
Notification of direct transfer requests
Notification of requests to cancel direct transfer

4.1.2 Property-related events

Events
Notification of property state changes
Notification of state changes in configurable property values

4.1.3 State-related events

Events
Notification of camera disconnection
Notification of changes in job states
Notification of warnings when the camera will shut off
Notification that the camera will remain on for a longer period
Notification of remote release failure
Notification of internal SDK errors

Revision History/Date	Corrections	Reviser	Remarks

4.2 Event Details

Events are explained in the following format.

4.2.xx EventID

Event ID of the issued event. Used to distinguish event types in callback functions.

Description

Explains the event and cites related considerations.

Event Data

Event data passed as event callback function arguments.

Event Data	Data Type	Argument Name in the Callback Function
The nature of the data that is passed	The data type	The value passed as an argument

4.2.1 kEdsStateEvent_Shutdown (Notification of camera disconnection)

Description

Indicates that a camera is no longer connected to a computer, whether it was disconnected by unplugging a cord, opening the compact flash compartment, turning the camera off, auto shut-off, or by other means.

Event Data

Event Data	Data Type	Value of inParameter
None	—	—

4.2.2 kEdsPropertyEvent_PropertyChanged (Notification of property state changes)

Description

Notifies that a camera property value has been changed.

The changed property can be retrieved from event data.

The changed value can be retrieved by means of EdsGetPropertyData.

If the property type is 0x0000FFFF, the changed property cannot be identified. Thus, retrieve all required properties repeatedly.

Event Data

Event Data	Data Type	Value of inPropertyID
The property type	EdsPropertyID	A property ID

See Also

- For details on property IDs, see the [Property Lists](#).

Revision History/Date	Corrections	Reviser	Remarks

4.2.3 kEdsPropertyEvent_PropertyDescChanged (Notification of state changes in configurable property values)

Description

Notifies of changes in the list of camera properties with configurable values.

The list of configurable values for property IDs indicated in event data can be retrieved by means of EdsGetPropertyDesc.

Event Data

Event Data	Data Type	Value of inPropertyID
Property type for which the list of configurable values has changed	EdsPropertyID	Of the capture-related properties, those properties that have configurable values that can be retrieved; otherwise, "Unknown" (0x0000FFFF)

See Also

For details on property IDs, see the [Property Lists](#).

4.2.4 kEdsObjectEvent_DirItemCreated (Notification of file creation)

Description

Notifies of the creation of objects such as new folders or files on a camera compact flash card or the like.

This event is generated if the camera has been set to store captured images simultaneously on the camera and a computer, for example, but not if the camera is set to store images on the computer alone.

Newly created objects are indicated by event data.

Event Data

Event Data	Data Type	Value of inRef
New directory or file object	EdsDirectoryItemRef	Pointer to the directory or file object

4.2.5 kEdsObjectEvent_DirItemRemoved (Notification of file deletion)

Description

Notifies of the deletion of objects such as folders or files on a camera compact flash card or the like.

Deleted objects are indicated in event data.

Event Data

Event Data	Data Type	Value of inRef
Deleted directory or file object	EdsDirectoryItemRef	Pointer to the directory or file object

4.2.6 kEdsObjectEvent_DirItemInfoChanged (Notification of changes in file information)

Description

Notifies that information of DirItem objects has been changed.

Changed objects are indicated by event data.

The changed value can be retrieved by means of EdsGetDirectoryItemInfo.

Event Data

Revision History/Date	Corrections	Reviser	Remarks

Event Data	Data Type	Value of inRef
Changed directory or file object	EdsDirectoryItemRef	Pointer to the directory or file object

4.2.7 kEdsObjectEvent_DirItemContentChanged

Description

Notifies that header information has been updated, as for rotation information of image files on the camera. If this event is received, get the file header information again, as needed.

Event Data

Event Data	Data Type	Value of inRef
Changed file	EdsDirectoryItemRef	Pointer to the directory item object

Note

To retrieve image properties, you must obtain them from image objects after using DownloadImage or DownloadThumbnail.

4.2.8 kEdsObjectEvent_VolumeInfoChanged (Notification of changes in the volume information of recording media)

Description

Notifies that the volume object (memory card) state (VolumeInfo) has been changed. Changed objects are indicated by event data. The changed value can be retrieved by means of EdsGetVolumeInfo.

Event Data

Event Data	Data Type	Value of inRef
Changed volume object	EdsVolumeRef	Pointer to the volume object

4.2.9 kEdsObjectEvent_VolumeUpdateItems (Notification of requests to update volume information)

Description

Notifies if the designated volume on a camera has been formatted. If notification of this event is received, get sub-items of the designated volume again as needed. Changed volume objects can be retrieved from event data.

Event Data

Event Data	Data Type	Value of inRef
Changed volume object	EdsVolumeRef	Pointer to the volume object

4.2.10 kEdsObjectEvent_FolderUpdateItems (Notification of requests to update folder information)

Description

Notifies if many images are deleted in a designated folder on a camera. If notification of this event is received, get sub-items of the designated folder again as needed.

Revision History/Date	Corrections	Reviser	Remarks

Changed folders (specifically, directory item objects) can be retrieved from event data.

Event Data

Event Data	Data Type	Value of inRef
Changed folder	EdsDirectoryItemRef	Pointer to the directory item object

4.2.11 kEdsStateEvent_JobStatusChanged (Notification of changes in job states)

Description

Notifies of whether or not there are objects waiting to be transferred to a host computer.
This is useful when ensuring all shot images have been transferred when the application is closed.

Event Data

Event Data	Data Type	Value of inParameter
Whether or not there are objects waiting to be transferred	EdsUInt32	1: There are objects to be transferred 0: There are no objects to be transferred

4.2.12 kEdsObjectEvent_DirItemRequestTransfer (Notification of file transfer requests)

Description

Notifies that there are objects on a camera to be transferred to a computer.
This event is generated after remote release from a computer or local release from a camera.
If this event is received, objects indicated in the event data must be downloaded. Furthermore, if the application does not require the objects, instead of downloading them, execute EdsDownloadCancel and release resources held by the camera.

Event Data

Event Data	Data Type	Value of inRef
Array of directories or file objects to be transferred	EdsDirectoryItemRef	Directory or file object

4.2.13 kEdsObjectEvent_DirItemRequestTransferDT (Notification of direct transfer requests)

Description

Notifies if the camera's direct transfer button is pressed.
If this event is received, objects indicated in the event data must be downloaded. Furthermore, if the application does not require the objects, instead of downloading them, execute EdsDownloadCancel and release resources held by the camera.

Event Data

Event Data	Data Type	Value of inRef
Array of directories or file objects to be transferred directly	EdsDirectoryItemRef []	Array of directories and file objects

Revision History/Date	Corrections	Reviser	Remarks

4.2.14 kEdsObjectEvent_DirItemCancelTransferDT (Notification of requests to cancel direct transfer)

Description

Notifies of requests from a camera to cancel object transfer if the button to cancel direct transfer is pressed on the camera.

If the parameter is 0, it means that cancellation of transfer is requested for objects still not downloaded, with these objects indicated by kEdsObjectEvent_DirItemRequestTransferDT.

Event Data

Event Data	Data Type	Value of inRef
Array of directories or file objects for which to cancel transfer	EdsDirectoryItemRef []	Array of directories and file objects

4.2.15 kEdsStateEvent_WillSoonShutDown (Notification of warnings when the camera will shut off)

Description

Notifies that the camera will shut down after a specific period.

Generated only if auto shut-off is set.

Exactly when notification is issued (that is, the number of seconds until shutdown) varies depending on the camera model.

To continue operation without having the camera shut down, use EdsSendCommand to extend the auto shut-off timer. The time in seconds until the camera shuts down is returned as the initial value.

Event Data

Event Data	Data Type	Value of inParameter
Number of seconds until the camera shuts down	EdsUInt32	Number of seconds

4.2.16 kEdsStateEvent_ShutDownTimerUpdate (Notification that the camera will remain on for a longer period)

Description

As the counterpart event to kEdsStateEvent_WillSoonShutDown, this event notifies of updates to the number of seconds until a camera shuts down. After the update, the period until shutdown is model-dependent.

Event Data

Event Data	Data Type	Value of inParameter
None	—	—

4.2.17 kEdsStateEvent_CaptureError (Notification of remote release failure)

Description

Notifies that a requested release has failed, due to focus failure or similar factors.

Event Data

Event Data	Data Type	Value of inParameter
Error code	EdsUInt32	Error code

Revision History/Date	Corrections	Reviser	Remarks

Error codes received in the event data are as follows.

Error Code	Description
0x00000001	Shooting failure
0x00000002	The lens was closed
0x00000003	General errors from the shooting mode, such as errors from the bulb or mirror-up mechanism
0x00000004	Sensor cleaning
0x00000005	Error because the camera was set for silent operation
0x00000006	Prohibited settings using CFn-2, and no card inserted
0x00000007	Card error (including CARD-FULL/No.-FULL)
0x00000008	Write-protected

4.2.18 kEdsStateEvent_InternalError (Notification of internal SDK errors)

Description

Notifies of internal SDK errors.

If this error event is received, the issuing device will probably not be able to continue working properly, so cancel the remote connection.

Event Data

Event Data	Data Type	Value of inParameter
—	EdsUInt32	Unspecified value

Revision History/Date	Corrections	Reviser	Remarks

5. Properties

Properties of camera and images objects can be retrieved and set by means of **EdsGetPropertyData**, **EdsSetPropertyData**, and other APIs.

For certain properties, if the target object is a camera, you can use the **EdsGetPropertyDesc** API to get the properties that can currently be set. For details, see the description of **EdsGetPropertyDesc**.

For the various properties there are, this section explains the objects they describe and what the properties mean.

5.1 Property Lists

Property IDs are listed below. <defined location>EDSDKTypes.h

■ Camera Setting Properties

Value	Description
0x00000002	Product name
0x00000004	Owner
0x00000005	Manufacturer
0x00000006	For cameras, the system time; for images, the shooting time
0x00000007	Firmware version
0x00000008	Battery state: 0–100% or "AC"
0x00000009	Custom Function settings
0x0000000b	Destination where image was saved
0x0000000c	Current Storage
0x0000000d	Current Folder
0x0000000f	Extension Body ID

■ Image Properties

Value	Description
0x00000100	Stored image
0x00000102	Image orientation
0x00000103	ICC Profile data
0x00000104	Focus information
0x00000106	White balance (light source)
0x00000107	Color temperature setting value
0x00000108	White balance shift compensation
0x0000010d	Color space setting
0x00000114	Picture style
0x00000115	Picture style setting details
0x00000200	Computer settings caption for the picture style at the time of shooting

■ Image GPS Properties

Value	Description
0x00000800	Version of GPSInfoIFD
0x00000801	Whether the latitude is north or south
0x00000802	Latitude

Revision History/Date	Corrections	Reviser	Remarks

0x00000803	Whether the longitude is east or west
0x00000804	Longitude
0x00000805	Reference altitude
0x00000806	Altitude
0x00000807	GPS Time stamp
0x00000808	GPS satellites
0x00000809	GPS status
0x00000812	Geodetic survey data used by the GPS receiver
0x0000081D	GPS date stamp

■ Capture Properties

Value	Description
0x00000400	Shooting mode
0x00000401	Drive mode
0x00000402	ISO sensitivity setting value
0x00000403	Metering mode
0x00000404	AF mode
0x00000405	Aperture value at the time of shooting
0x00000406	Shutter speed setting value
0x00000407	Exposure compensation
0x00000409	Lens focal length information at the time of shooting
0x0000040a	Number of available shots
0x0000040b	ISO, auto exposure or flash exposure bracket
0x0000040c	White balance bracket
0x0000040d	String representing the lens name
0x0000040e	Auto exposure bracket value
0x0000040f	Flash exposure bracket value
0x00000410	ISO bracket value
0x00000411	Noise reduction
0x00000412	Use of the flash (activated or not)
0x00000413	Red-eye reduction
0x00000414	Flash type
0x00000416	Lens state: attached or none
0x00000418	Artist
0x00000419	Copyright

■ EVF Properties

Value	Description
0x00000500	Output device for live view
0x00000501	Status of live view
0x00000502	White balance of live view image.
0x00000503	Color temperature of live view image
0x00000504	Depth of field during preview mode
0x00000507	Zoom ratio for live view
0x00000508	Focus and zoom border position for live view
0x0000050B	Cropping position of the enlarged live view image
0x0000050C	Display status of histogram

Revision History/Date	Corrections	Reviser	Remarks

0x0000050E	AF mode for live view
0x00000515	HistogramY for live view image
0x00000516	HistogramR for live view image
0x00000517	HistogramG for live view image
0x00000518	HistogramB for live view image
0x00000540	Coordinate system of live view image
0x00000541	Focus and zoom border rectangle for live view

■ For PowerShot Properties

Value	Description
0x00000600	Zoom step
0x00000601	Strobe mode type
0x00000605	Status of lens barrel

■ Other

Value	Description
0x00000510	Status of movie shooting
0x0000FFFF	Unknown

Revision History/Date		Corrections	Reviser	Remarks

5.2 Property Details

Properties are explained in the following format.

5.2.xx PropertyID

The property ID.

Description

Explains the role of the property and how to work with it.

Target Object

Indicates the "target object" that the property describes and which is subject to operations involving the property.

Properties for which "Access Type" is [Read] can be read by means of objects subject to operations, such as remote cameras. Similarly, an access type of [Write] means the property can be set by means of operations on objects subject to operations.

"Data type number" indicates the enumeration name for data types that can be retrieved by means of **EdsGetPropertySize**.

"Data type" indicates the data type of property data that can be retrieved or set by means of an **EdsVoid** pointer, which is a dummy argument for **EdsGetPropertyData** or **EdsSetPropertyData**.

Value

Indicates possible values for the property.

Values are expressed as decimals unless otherwise noted.

Note

Considerations when using the property.

5.2.1 kEdsPropID_ProductName

Description

A string representing the product name.

If the target object is **EdsCameraRef**, this property indicates the name of the remote camera.

If the target object is **EdsImageRef**, this property indicates the name of the camera used to shoot the image.

Data Type

Data type number	Data type
kEdsDataType_String	EdsChar[]

Target Object

Target object	Access type	Data type number	Data type
EdsCameraRef	Read	kEdsDataType_String	EdsChar[]
EdsImageRef			

Value

ASCII text strings up to 32 characters, including null-terminated strings.

Revision History/Date		Corrections	Reviser	Remarks

5.2.2 kEdsPropID_BodyIDEx

Description

Indicates the product serial number.

If the target object is EdsCameraRef, this property indicates the serial number of the remote camera.

If the target object is EdsImageRef, this property indicates the serial number of the camera used to shoot the image.

Data Type

Data type number	Data type
kEdsDataType_String	EdsChar[]

Target Object

Target object	Access type	Data type number	Data type
EdsCameraRef	Read	kEdsDataType_String	EdsChar[]
EdsImageRef			

Value

Integer values.

5.2.3 kEdsPropID_OwnerName

Description

Indicates a string identifying the owner as registered on the camera.

If the target object is EdsCameraRef, this property indicates the owner name for the remote camera.

If the target object is EdsImageRef, this property indicates the owner name for the camera used to shoot the image.

Target Object

Target object	Access type	Data type number	Data type
EdsCameraRef	Read/Write	kEdsDataType_String	EdsChar[]
EdsImageRef	Read	kEdsDataType_String	EdsChar[]

Value

ASCII text strings up to 32 characters, including null-terminated strings.

Note

Be sure to perform the following procedure before setting this property.

Execute UI lock using EdsSendStatusCommand (with designate 1 in inParam).

5.2.4 kEdsPropID_Artist

Description

Indicates a string identifying the photographer as registered on the camera.

If the target object is EdsCameraRef, this property indicates the owner name for the remote camera.

If the target object is EdsImageRef, this property indicates the owner name for the camera used to shoot the image.

Target Object

Target object	Access type	Data type number	Data type
EdsCameraRef	Read/Write	kEdsDataType_String	EdsChar[]
EdsImageRef	Read	kEdsDataType_String	EdsChar[]

Revision History/Date	Corrections	Reviser	Remarks

Value

ASCII text strings up to 64 characters, including null-terminated strings.

Note

Be sure to perform the following procedure before setting this property.
Execute UI lock using EdsSendStatusCommand (with designate 1 in inParam).

5.2.5 kEdsPropID_Copyright

Description

Indicates a string identifying the copyright information as registered on the camera.
If the target object is EdsCameraRef, this property indicates the owner name for the remote camera.
If the target object is EdsImageRef, this property indicates the owner name for the camera used to shoot the image.

Target Object

Target object	Access type	Data type number	Data type
EdsCameraRef	Read/Write	kEdsDataType_String	EdsChar[]
EdsImageRef	Read	kEdsDataType_String	EdsChar[]

Value

ASCII text strings up to 64 characters, including null-terminated strings.

Note

Be sure to perform the following procedure before setting this property.
Execute UI lock using EdsSendStatusCommand (with designate 1 in inParam).

5.2.6 kEdsPropID_MakerName

Description

Indicates a string identifying the manufacturer.

Target Object

Target object	Access type	Data type number	Data type
EdsImageRef	Read	kEdsDataType_String	EdsChar[]

Value

ASCII strings, including null-terminated strings. For our purposes: "Canon".

5.2.7 kEdsPropID_DateTime

Description

Indicates the time and date set on the camera or the shooting date and time of images.
If the target object is EdsCameraRef, this property indicates the camera system time.
If the target object is EdsImageRef, this property indicates the time and date of shooting.

Target Object

Target object	Access type
EdsCameraRef	Read
EdsImageRef	Read

Value

The time and date as an EdsTime type; for Read or Write operations.

Revision History/Date	Corrections	Reviser	Remarks

5.2.8 kEdsPropID_FirmwareVersion

Description

Indicates the camera's firmware version.

Data Type

Data type number	Data type
kEdsDataType_String	EdsChar[]

Target Object

Target object	Access type
EdsCameraRef	Read
EdsImageRef	Read

Value

ASCII text strings up to 32 characters, including null-terminated strings.

5.2.9 kEdsPropID_BatteryLevel

Description

Indicates the camera battery level.

When the battery reaches a particular level, a kEdsPropertyEvent_PropertyChanged event is generated.

The battery level that triggers the event is model-dependent.

Target Object

Target object	Access type	Data type number	Data type
EdsCameraRef	Read	kEdsDataType_UInt32	EdsUInt32

Value

Value	Description
0-100	Battery level (%)
0xffffffff	AC power

5.2.10 kEdsPropID_BatteryQuality

Description

Gets the level of degradation of the battery.

Target Object

Target object	Access type	Data type number	Data type
EdsCameraRef	Read	kEdsDataType_UInt32	EdsUInt32

Value

Value	Description
3:kEdsBatteryQuality_Full	No degradation
2:kEdsBatteryQuality_HI	Slight degradation
1:kEdsBatteryQuality_Half	Degraded
0:kEdsBatteryQuality_Low	Degraded

Revision History/Date	Corrections	Reviser	Remarks

5.2.11 kEdsPropID_SaveTo

Description

Indicates the destination of images after shooting.

Target Object

Target object	Access type	Data type number	Data type
EdsCameraRef	Read/Write	kEdsDataType_UInt32	EdsUInt32

Value

Values defined in Enum EdsSaveTo.

Enum EdsSaveTo <defined location>EDSDKTypes.h

Value	Description
1	Save on a memory card of a remote camera
2	Save by downloading to a host computer
3	Save both ways

Note

- If kEdsSaveTo_Host or kEdsSaveTo_Both is used, the camera caches the image data to be transferred until DownloadComplete or CancelDownload APIs are executed on the host computer (by an application). The application creates a callback function to receive camera events. If kEdsObjectEvent_DirItemRequestTransfer or kEdsObjectEvent_DirItemRequestTransferDT events are received, the application must execute DownloadComplete (after downloading) or CancelDownload (if images are not needed) for the camera.

Revision History/Date	Corrections	Reviser	Remarks

5.2.12 kEdsPropID_FocusInfo

Description

Indicates focus information for image data at the time of shooting.

This property does not depend on the AF mode at the time of shooting. AF frames in focus are indicated by JustFocus, even during manual shooting.

Live View	AF Frame
When operating	The AF frame depending on the AF mode during live view set for the camera
When stopped	The AF frame during Quick Mode

Target Object

Target object	Access type	Data type number	Data type
EdsCameraRef	Read	kEdsDataType_FocusInfo	EdsFocusInfo
EdsImageRef	Read	kEdsDataType_FocusInfo	EdsFocusInfo

Value

Element	Value
imageRect	The upper-left coordinates of the image, as well as the width and height
pointNumber	AF frame number
focusPoint	valid Invalid AF frame: 0 Valid AF frame: 1 Note: There are as many valid AF frames as the number in FrameNumber. Usually, AF frames are recorded consecutively, starting with 0. Note: AF frame coordinates and the array number for storage vary by model.
	Selected Selected AF Frame: 1 Unselected AF Frame: 0
	justFocus In focus: 1 Out of focus: 0
	rect Upper-left and lower-right coordinates of the AF frame
	reserved Reserved

5.2.13 kEdsPropID_ICCProfile

Description

Indicates the ICC profile data embedded in an image.

An error is returned if you use EdsGetPropertyData to attempt to get the ICC profile of an image without an embedded ICC profile.

Target Object

Target object	Access type	Data type number	Data type
EdsImageRef	Read	kEdsDataType_ByteBlock	EdsInt8[]

Value

Returns ICC profile data as ByteBlock data.

Revision History/Date	Corrections	Reviser	Remarks

5.2.14 kEdsPropID_ImageQuality

Description

Indicates the image quality.

If you designate EdsCameraRef as the target object, this property indicates the current image quality set on the camera.

Target Object

Target object	Access type	Data type number	Data type
EdsCameraRef	Read	kEdsDataType_UInt32	EdsUInt32

Value

Bit number	Description	Value
24-31	Image Size of the main image	Values defined in enum EdsImageSize
20-23	Image Format of the main image	Values defined in enum EdsImageFormat
16-19	Image Compress Quality of the main image	Values defined in enum EdsImageCompressQuality
12-15	reserved	
8-11	Image Size of the secondary image	Values defined in enum EdsImageSize
4-7	Image Format of the secondary image	Values defined in enum EdsImageFormat
0-3	Image Compress Quality of the secondary image	Values defined in enum EdsImageCompressQuality

EdsImageType <defined location>EDSDKTypes.h

Value	Description
kEdsTargetImageType_Unknown	Folder, or unknown image type
kEdsTargetImageType_Jpeg	JPEG
kEdsImageType_CRW	CRW
kEdsImageType_CR2	CR2

EdsImageSize <defined location>EDSDKTypes.h

Value	Description
0	Large
1	Medium
2	Small
5	Medium 1
6	Medium 2
14	Small1
15	Small2
16	Small3
0xFFFFFFFF	Unknown

Revision History/Date	Corrections	Reviser	Remarks

EdsCompressQuality <defined location>EDSDKTypes.h

Value	Description
2	Normal
3	Fine
4	Lossless
5	Superfine
0xFFFFFFFF	Unknown

Note

- These appropriate values are enumerated in “EDSDKTypes.h”.

5.2.15 kEdsPropID_Orientation

Description

Indicates image rotation information.

This property can be read or written, regardless of the image compression format (RAW, JPEG, and so on); the access type is Read/Write.

Target Object

Target object	Access type	Data type number	Data type
EdsImageRef	Read	kEdsDataType_UInt32	EdsUInt32

Value

Value	Description	U: Up D: Down L: Left R: Right
1	The 0th row is at the visual top of the image, and the 0th column is on the visual left-hand side	U L + R D
3	The 0th row is at the visual bottom of the image, and the 0th column is on the visual right-hand side	D R + L U
6	The 0th row is on the visual right-hand side of the image, and the 0th column is at the visual top	L D + U R
8	The 0th row is on the visual left-hand side of the image, and the 0th column is at the visual bottom	R U + D L
Other	Reserved	

Note

Rotation information is retrieved from images' Exif information. Thus, images rotated by means of a software tool of computer may be displayed differently from how they would appear using the actual rotation information.

Revision History/Date	Corrections	Reviser	Remarks

5.2.16 kEdsPropID_AEMode

Description

Indicates settings values of the camera in shooting mode.

When the AE Mode Dial is set to camera user settings, you will get the AE mode which is been registered to the selected camera user setting.

For the camera which AE Mode is settable, you can change the AE Mode by using kEdsPropID_AEModeSelect.

Target Object

Target object	Access type	Data type number	Data type
EdsCameraRef	Read	kEdsDataType_UInt32	EdsUInt32
EdsImageRef	Read		

Value

Values defined in Enum EdsAEMode.

Enum EdsAEMode

Value	Description
0	Program AE
1	Shutter-Speed Priority AE
2	Aperture Priority AE
3	Manual Exposure
4	Bulb
5	Auto Depth-of-Field AE
6	Depth-of-Field AE
7	Camera settings registered
8	Lock
9	Auto
10	Night Scene Portrait
11	Sports
12	Portrait
13	Landscape
14	Close-Up
15	Flash Off
19	Creative Auto
22	Scene Intelligent Auto
23	Night Scenes
24	Backlit Scenes
26	Kids
27	Food
28	Candlelight
30	Grainy B/W
31	Soft focus
32	Toy camera effect
33	Fish-eye effect
34	Water painting effect
35	Miniature effect
20	Movies
21	Photo In Movie (This value is valid for only Image.)

Revision History/Date	Corrections	Reviser	Remarks

22	SceneIntelligentAuto
23	Handheld Night Scene
24	HDR Backlight Control
26	Children
27	Food
28	Candlelight Portraits
30	Grainy B/W
31	Soft focus
32	Toy camera effect
33	Fish-eye effect
34	Water painting effect
35	Miniature effect
36	HDR art standard
37	HDR art vivid
38	HDR art bold
39	HDR art embossed
40	Dream
41	Old Movies
42	Memory
43	Dramatic B&W
44	Miniature effect movie
45	Panning
46	Group Photo
50	Myself (Self Portrait)
51	Plus Movie Auto
52	SmoothSkin
54	Silent Mode
55	Flexible-priority AE
56	Oil painting (Art bold effect)
57	Fireworks
0xFFFFFFFF	Not valid/no settings changes

Revision History/Date	Corrections	Reviser	Remarks

5.2.17 kEdsPropID_AEModeSelect

Description

Indicates settings values of the camera in shooting mode.

You cannot set (that is, Write) this property on cameras with a mode dial.

If the target object is EdsCameraRef, you can use GetPropertyDesc to access this property and get a list of property values that can currently be set.

However, you cannot get a list of settable values from models featuring a dial. The GetPropertyDesc return value will be EDS_ERR_OK, and no items will be listed as values you can set.

The shooting mode is in either an applied or simple shooting zone. When a camera is in a shooting mode of the simple shooting zone, a variety of capture-related properties (such as for auto focus, drive mode, and metering mode) are automatically set to the optimal values. Thus, when the camera is in a shooting mode of a simple shooting zone, capture-related properties cannot be set on the camera.

Target Object

Target object	Access type	Data type number	Data type
EdsCameraRef	Read/(Write)	kEdsDataType_UInt32	EdsUInt32

Value

Values defined in Enum EdsAEMode.

Enum EdsAEModeSelect

Value	Description
7	Custom1
16	Custom2
17	Custom3
25	SCN Special scene

Revision History/Date	Corrections	Reviser	Remarks

5.2.18 kEdsPropID_DriveMode

Description

Indicates settings values of the camera in drive mode.

Target Object

Target object	Access type	Data type number	Data type
EdsCameraRef	Read/Write	kEdsDataType_Uint32	EdsUInt32
EdsImageRef	Read		

Value

Value	Description
0x00000000	Single shooting
0x00000001	Continuous Shooting
0x00000002	Video
0x00000004	High speed continuous
0x00000005	Low speed continuous
0x00000006	Single Silent shooting
0x00000007	Self-timer:Continuous
0x00000010	Self-timer:10 sec
0x00000011	Self-timer:2 sec
0x00000012	14fps super high speed
0x00000013	Silent single shooting
0x00000014	Silent contin shooting
0x00000015	Silent HS continuous
0x00000016	Silent LS continuous

5.2.19 kEdsPropID_ISOSpeed

Description

Indicates ISO sensitivity settings values.

Caution is advised because it is possible to retrieve different values by means of EdsCameraRef and EdsImageRef.

If the target object is EdsCameraRef, you can use GetPropertyDesc to access this property and get a list of property values that can currently be set.

Target Object

Target object	Access type	Data type number	Data type
EdsCameraRef	Read/Write	kEdsDataType_Uint32	EdsUInt32
EdsImageRef	Read		

Value (EdsCameraRef)

Value	Description
0x00000000	ISO Auto
0x00000040	ISO 50
0x00000048	ISO 100
0x0000004b	ISO 125
0x0000004d	ISO 160
0x00000050	ISO 200
0x00000053	ISO 250
0x00000055	ISO 320

Revision History/Date	Corrections	Reviser	Remarks

0x00000058	ISO 400
0x0000005b	ISO 500
0x0000005d	ISO 640
0x00000060	ISO 800
0x00000063	ISO 1000
0x00000065	ISO 1250
0x00000068	ISO 1600
0x0000006b	ISO 2000
0x0000006d	ISO 2500
0x00000070	ISO 3200
0x00000073	ISO 4000
0x00000075	ISO 5000
0x00000078	ISO 6400
0x0000007b	ISO 8000
0x0000007d	ISO 10000
0x00000080	ISO 12800
0x00000088	ISO 25600
0x00000090	ISO 51200
0x00000098	ISO 102400
0x000000a0	ISO 204800
0x000000a8	ISO 409600
0xffffffff	Not valid/no settings changes

Value (EdsImageRef)

Value	Description
50	ISO 50
100	ISO 100
200	ISO 200
400	ISO 400
800	ISO 800
1600	ISO 1600
3200	ISO 3200
6400	ISO 6400
12800	ISO 12800
25600	ISO 25600
51200	ISO 51200
102400	ISO 102400

The value you can retrieve from the image data, indicated by EdsImageRef, represents the ISO value itself.

Revision History/Date	Corrections	Reviser	Remarks

5.2.20 kEdsPropID_MeteringMode

Description

Indicates the metering mode.

If the target object is EdsCameraRef, you can use GetPropertyDesc to access this property and get a list of property values that can currently be set.

Target Object

Target object	Access type	Data type number	Data type
EdsCameraRef	Read/Write	kEdsDataType_Uint32	EdsUInt32
EdsImageRef	Read		

Value

Value	Description
1	Spot metering
3	Evaluative metering
4	Partial metering
5	Center-weighted averaging metering
0xFFFFFFFF	Not valid/no settings changes

Note

For details on various metering modes, see the camera user's manual.

5.2.21 kEdsPropID_AFMode

Description

Indicates AF mode settings values.

Target Object

Target object	Access type	Data type number	Data type
EdsCameraRef	Read	kEdsDataType_Uint32	EdsUInt32
EdsImageRef			

Value

Value	Description
0	One-Shot AF
1	AI Servo AF
2	AI Focus AF
3	Manual Focus
0xffffffff	Not valid/no settings changes

Revision History/Date		Corrections	Reviser	Remarks

5.2.22 kEdsPropID_Av

Description

Indicates the camera's aperture value.

Caution is advised because EdsCameraRef and EdsImageRef yield different data types and values.

If the target object is EdsCameraRef, you can use GetPropertyDesc to access this property and get a list of property values that can currently be set.

Target Object

Target object	Access type	Data type number	Data type
EdsCameraRef	Read/Write	kEdsDataType_Uint32	EdsUInt32
EdsImageRef	Read	kEdsType_Rational	EdsRational

Value (EdsCameraRef)

Value	Aperture value
0x08	1
0x0B	1.1
0x0C	1.2
0x0D	1.2 (1/3)
0x10	1.4
0x13	1.6
0x14	1.8
0x15	1.8 (1/3)
0x18	2
0x1B	2.2
0x1C	2.5
0x1D	2.5 (1/3)
0x20	2.8
0x23	3.2
0x85	3.4
0x24	3.5
0x25	3.5 (1/3)
0x28	4
0x2B	4.5
0x2C	4.5
0x2D	5.0
0x30	5.6
0x33	6.3
0x34	6.7
0x35	7.1
0x38	8
0x3B	9
0x3C	9.5

Value	Aperture value
0x3D	10
0x40	11
0x43	13 (1/3)
0x44	13
0x45	14
0x48	16
0x4B	18
0x4C	19
0x4D	20
0x50	22
0x53	25
0x54	27
0x55	29
0x58	32
0x5B	36
0x5C	38
0x5D	40
0x60	45
0x63	51
0x64	54
0x65	57
0x68	64
0x6B	72
0x6C	76
0x6D	80
0x70	91
0xffffffff	Not valid/no settings changes

Note: Values labeled "(1/3)" represent property values when the step set in the Custom Function is 1/3.

Value (EdsImageRef)

Returns the aperture value as an EdsRational type.

Revision History/Date	Corrections	Reviser	Remarks

5.2.23 kEdsPropID_Tv

Description

Indicates the shutter speed.

Caution is advised because EdsCameraRef and EdsImageRef yield different values.

If the target object is EdsCameraRef, you can use GetPropertyDesc to access this property and get a list of property values that can currently be set.

Target Object

Target object	Access type	Data type number	Data type
EdsCameraRef	Read/Write	kEdsDataType_Uint32	EdsUInt32
EdsImageRef	Read	kEdsType_Rational	EdsRational

Value (EdsCameraRef)

Value	Shutter speed
0x0C	Bulb
0x10	30"
0x13	25"
0x14	20"
0x15	20" (1/3)
0x18	15"
0x1B	13"
0x1C	10"
0x1D	10" (1/3)
0x20	8"
0x23	6" (1/3)
0x24	6"
0x25	5"
0x28	4"
0x2B	3"2
0x2C	3"
0x2D	2"5
0x30	2"
0x33	1"6
0x34	1"5
0x35	1"3
0x38	1"
0x3B	0"8
0x3C	0"7
0x3D	0"6
0x40	0"5
0x43	0"4
0x44	0"3
0x45	0"3 (1/3)
0x48	1/4
0x4B	1/5
0x4C	1/6
0x4D	1/6 (1/3)
0x50	1/8

Value	Shutter speed
0x5D	1/25
0x60	1/30
0x63	1/40
0x64	1/45
0x65	1/50
0x68	1/60
0x6B	1/80
0x6C	1/90
0x6D	1/100
0x70	1/125
0x73	1/160
0x74	1/180
0x75	1/200
0x78	1/250
0x7B	1/320
0x7C	1/350
0x7D	1/400
0x80	1/500
0x83	1/640
0x84	1/750
0x85	1/800
0x88	1/1000
0x8B	1/1250
0x8C	1/1500
0x8D	1/1600
0x90	1/2000
0x93	1/2500
0x94	1/3000
0x95	1/3200
0x98	1/4000
0x9B	1/5000
0x9C	1/6000
0x9D	1/6400
0xA0	1/8000

Revision History/Date	Corrections	Reviser	Remarks

0x53	1/10 (1/3)	0xffffffff	Not valid/no settings changes
0x54	1/10		
0x55	1/13		
0x58	1/15		
0x5B	1/20 (1/3)		
0x5C	1/20		

Note: Values labeled "(1/3)" represent property values when the step set in the Custom Function is 1/3.

Value (EdsImageRef)

Returns the shutter speed value as a kEdsType_Rational type.

Note

- Bulb is designed so that it cannot be set on cameras from a computer by means of SetPropertyData. (It cannot even be retrieved by means of GetPropertyDesc as a value that can be set.) This is because incorrect handling of Bulb would prevent shutter control from a computer.

5.2.24 kEdsPropID_FocalLength

Description

Indicates the focal length of the lens.

When a single-focus lens is used, the same value is returned for the Wide and Tele focal length.

You can obtain three items of information at once by using EdsGetPropertyData to get this property: the focal length at the time of shooting, the focal length of Wide, and the focal length of Tele. In this case, the buffer storing this property data is passed in three parts. However, if you prefer to get only the focal length at the time of shooting, you can get only that single part of the buffer.

Example: To get only the focal length at the time of shooting

```
EdsRational ratVal ;
```

```
err = EdsGetPropertyData( ref, kEdsPropID_FocalLength, 0, sizeof( EdsRational ), &ratVal ) ;
```

Target Object

Target object	Access type	Data type number	Data type
EdsImageRef	Read	kEdsDataType_Rational_Array	EdsRational[]

Value

Array number	Description	Value
0	Focal length at the time of shooting	Focal length value
1	Wide focal length	
2	Tele focal length	

Revision History/Date	Corrections	Reviser	Remarks

5.2.25 kEdsPropID_ExposureCompensation

Description

Indicates the exposure compensation.

Exposure compensation refers to compensation relative to the position of the standard exposure mark (in the center of the exposure gauge).

Caution is advised because EdsCameraRef and EdsImageRef yield different values.

If the target object is EdsCameraRef, you can use GetPropertyDesc to access this property and get a list of property values that can currently be set.

Target Object

Target object	Access type	Data type number	Data type
EdsCameraRef	Read/Write	kEdsDataType_Uint32	EdsUInt32
EdsImageRef	Read	kEdsType_Rational	EdsRational

Value (EdsCameraRef)

Value	Exposure compensation
0x28	+5
0x25	+4 2/3
0x24	+4 1/2
0x23	+4 1/3
0x20	+4
0x1D	+3 2/3
0x1C	+3 1/2
0x1B	+3 1/3
0x18	+3
0x15	+2 2/3
0x14	+2 1/2
0x13	+2 1/3
0x10	+2
0x0D	+1 2/3
0x0C	+1 1/2
0x0B	+1 1/3
0x08	+1
0x05	+2/3
0x04	+1/2
0x03	+1/3
0x00	0

Value	Exposure compensation
0xFD	-1/3
0xFC	-1/2
0xFB	-2/3
0xF8	-1
0xF5	-1 1/3
0xF4	-1 1/2
0xF3	-1 2/3
0xF0	-2
0xED	-2 1/3
0xEC	-2 1/2
0xEB	-2 2/3
0xE8	-3
0xE5	-3 1/3
0xE4	-3 1/2
0xE3	-3 2/3
0xE0	-4
0xDD	-4 1/3
0xDC	-4 1/2
0xDB	-4 2/3
0xD8	-5
0xffffffff	Not valid/no settings changes

Value (EdsImageRef)

Returns the exposure compensation as a kEdsType_Rational type.

Note

- Exposure compensation is not available if the camera is in manual exposure mode. Thus, the exposure compensation property is invalid.

Revision History/Date	Corrections	Reviser	Remarks

5.2.26 kEdsPropID_AvailableShots

Description

Indicates the number of shots available on a camera.

Target Object

Target object	Access type	Data type number	Data type
EdsCameraRef	Read	kEdsDataType_Uint32	EdsUInt32

Value

Integer values.

Note

- Cameras return the number of shots left on the camera based on the available disk capacity of the host computer they are connected to.

5.2.27 kEdsPropID_Bracket

Description

Indicates the current bracket type.

If multiple brackets have been set on the camera, you can get the bracket type as a logical sum.

This property cannot be used to get bracket compensation. Compensation is collected separately because there are separate properties for each bracket type.

Target Object

Target object	Access type	Data type number	Data type
EdsCameraRef	Read	kEdsDataType_Uint32	EdsUInt32
EdsImageRef			

Value

Values defined in Enum EdsBracket.

Enum EdsBracket <defined location>EDSDKType.h

Value	Description
0x01	AE bracket
0x02	ISO bracket
0x04	WB bracket
0x08	FE bracket
0xFFFFFFFF	Bracket off

Revision History/Date	Corrections	Reviser	Remarks

5.2.28 kEdsPropID_AEBracket

Description

Indicates the AE bracket compensation of image data.

Target Object

Target object	Access type	Data type number	Data type
EdsImageRef	Read	kEdsDataType_Rational	EdsRational

Value

Returns the AE bracket compensation. For details on the compensation range and number of steps, see the camera user's manual.

5.2.29 kEdsPropID_FEBracket

Description

Indicates the FE bracket compensation at the time of shooting of image data.

Target Object

Target object	Access type	Data type number	Data type
EdsImageRef	Read	kEdsDataType_Rational	EdsRational

Value

Returns the FE bracket compensation. For details on the compensation range and number of steps, see the camera user's manual.

5.2.30 kEdsPropID_ISOBracket

Description

Indicates the ISO bracket compensation at the time of shooting of image data.

Target Object

Target object	Access type	Data type number	Data type
EdsImageRef	Read	kEdsDataType_Rational	EdsRational

Value

Returns the ISO bracket compensation. For details on the compensation range and number of steps, see the camera user's manual.

Revision History/Date		Corrections	Reviser	Remarks

5.2.31 kEdsPropID_WhiteBalanceBracket

Description

Indicates the white balance bracket amount.

Target Object

Target object	Access type	Data type number	Data type
EdsCameraRef	Read	kEdsDataType_Int32_Array	EdsInt32[]
EdsImageRef			

Value(EdsCameraRef)

Array number	Description	Value
0	BracketMode	0 = OFF 1 = Mode AB 2 = Mode GM 0xFFFFFFFF = Not Supported
1	BracketValueAB The bracket amount from the WhiteBalanceShift position toward AB	0 to +9
2	BracketValueGM The bracket amount from the WhiteBalanceShift position toward GM	0 to +9

Note: "AB" means the bracket toward amber-blue and "GM" toward green-magenta.

Note

- Under the camera specifications, AB and GM modes cannot be set at the same time.
- Depending on the model, it may not be possible to get an accurate value.

Value (EdsImageRef)

Array number	Description	Value
0	BracketMode	0 = OFF 1 = Mode AB 2 = Mode GM 0xFFFFFFFF = Not Supported
1	BracketValueAB The bracket amount from the WhiteBalanceShift position toward AB	–9 to +9 (B direction–A direction)
2	BracketValueGM The bracket amount from the WhiteBalanceShift position toward GM	–9 to +9 (G direction–M direction)

Revision History/Date	Corrections	Reviser	Remarks

5.2.32 kEdsPropID_WhiteBalance

Description

Indicates the white balance type.

Target Object

Target object	Access type	Data type number	Data type
EdsCameraRef	Read/Write	kEdsDataType_Int32	EdsInt32
EdsImageRef	Read		

Value

Values defined in Enum EdsWhiteBalance.

Enum EdsWhiteBalance <defined location>EDSDKType.h

Value	Description
0	Auto: Ambience priority
1	Daylight
2	Cloudy
3	Tungsten
4	Fluorescent
5	Flash
6	Manual (set by shooting a white card or paper)
8	Shade
9	Color temperature
10	Custom white balance: PC-1
11	Custom white balance: PC-2
12	Custom white balance: PC-3
15	Manual 2
16	Manual 3
18	Manual 4
19	Manual 5
20	Custom white balance: PC-4
21	Custom white balance: PC-5
23	Auto: White priority

Note

- If the white balance type is "Color Temperature," to know the actual color temperature you must reference another property (kEdsPropID_ColorTemperature).

Revision History/Date	Corrections	Reviser	Remarks

5.2.33 kEdsPropID_ColorTemperature

Description

Indicates the color temperature setting value. (Units: Kelvin)

Valid only when the white balance is set to Color Temperature.

Target Object

Target object	Access type	Data type number	Data type
EdsCameraRef	Read/Write	kEdsDataType_UInt32	EdsUInt32
EdsImageRef	Read		

Value

2800–10000, in 100-Kelvin increments.

5200 represents a color temperature of 5200 K.

Note

- To know if the white balance is set to color temperature, refer to another property (kEdsPropID_WhiteBalance).

5.2.34 kEdsPropID_WhiteBalanceShift

Description

Indicates the white balance compensation.

Target Object

Target object	Access type	Data type number	Data type
EdsCameraRef	Read/Write	kEdsDataType_Int32_Array	EdsInt32[]
EdsImageRef	Read		

Value

Array number	Description	Value
0	ValueAB	–9 to +9 0x7FFFFFFF = invalid value Note: 0 means no compensation, (–) means compensation toward blue, and (+) means compensation toward amber.
1	ValueGM	–9 to +9 0x7FFFFFFF = invalid value Note: 0 means no compensation, (–) means compensation toward green, and (+) means compensation toward magenta.

Note: "AB" means compensation toward amber-blue and "GM" toward green-magenta.

5.2.35 kEdsPropID_ColorSpace

Description

Indicates the color space.

If the target object is EdsCameraRef and you designate ColorMatrix in inParam, this property corresponds to the color space setting value of ColorMatrix. Similarly, if you designate the processing parameter in inParam, it indicates that setting value. By using inParam = 0, you can designate the current color space.

Revision History/Date		Corrections	Reviser	Remarks

Target Object

Target object	Access type	Data type number	Data type
EdsCameraRef	Read/Write	kEdsDataType_UInt32	EdsUInt32
EdsImageRef	Read		

Value

Values of Enum EdsColorSpace.

Enum EdsColorSpace <defined location>EDSDKTypes.h

Value	Description
1	sRGB
2	Adobe RGB
0xFFFFFFFF	Unknown

5.2.36 kEdsPropID_PictureStyle

Description

Indicates the picture style.

This property is valid only for models supporting picture styles.

To get or set the picture style registered in "User Setting," designate user setting 1– (kEdsPictureStyle_User1–) in inParam. By using inParam = 0, you can designate the current picture style.

Target Object

Target object	Access type	Data type number	Data type
EdsCameraRef	Read/Write	kEdsDataType_UInt32	EdsUInt32
EdsImageRef	Read		

Value

Values defined in Enum EdsPictureStyle.

However, kEdsPictureStyle_UserX in Enum EdsPictureStyle is not used here.

Enum EdsPictureStyle <defined location>EDSDKTypes.h

Value	Picture style
0x0081	Standard
0x0082	Portrait
0x0083	Landscape
0x0084	Neutral
0x0085	Faithful
0x0086	Monochrome
0x0087	Auto (only for supported models).
0x0088	Fine Detail(only for supported models).
0x0041	Computer Setting 1 (base picture style only)
0x0042	Computer Setting 2 (base picture style only)
0x0043	Computer Setting 3 (base picture style only)

Revision History/Date	Corrections	Reviser	Remarks

Note

- Computer settings (1 and so on) refers to data that was set by designating a picture style file to upload to the camera from a host computer. Computer setting data is registered in the corresponding user setting. (For example, computer setting 1 corresponds to user setting 1). As a user setting, it represents a picture style that users can select.
- Picture styles registered in computer settings always have a base picture style. As for picture styles other than presets, only base picture styles can be retrieved by means of this property value.

5.2.37 kEdsPropID_PictureStyleDesc

Description

Indicates settings for each picture style.

This property is valid only for models supporting picture styles.

With **EdsGetPropertyData** or **EdsSetPropertyData**, you can designate a picture style in inParam to set that picture style setting item. By using inParam = 0, you can designate the current picture style.

Target Object

Target object	Access type	Data type number	Data type
EdsCameraRef	Read/Write	kEdsDataType_PictureStyleDesc	EdsPictureStyleDesc

Value

Element	Value	Description
contrast	An integer from -4 to 4	Contrast
sharpness	An integer from 0 to 7	Sharpness Streghth
saturation	An integer from -4 to 4	Saturation
colorTone	An integer from -4 to 4	Color tone
filterEffect	0: None 1: Yellow 2: Orange 3: Red 4: Green 0xFFFFFFFF: Unknown	Monochrome filter effect
toningEffect	0: None 1: Sepia 2: Blue 3: Violet 4: Green 0xFFFFFFFF: Unknown	Monochrome tone
sharpFineness	An integer from 1 to 5	Sharpness Fineness
sharpThreshold	An integer from 1 to 5	Sharpness Threshold

5.2.38 kEdsPropID_FlashOn

Description

Indicates if the flash was on at the time of shooting.

Target Object

Target object	Access type	Data type number	Data type
EdsImageRef	Read	kEdsDataType_Uint32	EdsUInt32

Revision History/Date	Corrections	Reviser	Remarks

Value

Value	Description
0	No flash
1	Flash

5.2.39 kEdsPropID_FlashMode

Description

Indicates the flash type at the time of shooting.

Target Object

Target object	Access type	Data type number	Data type
EdsImageRef	Read	kEdsDataType_Uint32_Array	EdsUInt32[]

Value

Array number	Description	Value
0	Flash type	0 = None (the "flash type" item itself is not displayed) 1 = Internal 2 = external E-TTL 3 = external A-TTL 0xFFFFFFFF = Invalid value
1	Synchro timing	0 = 1st Curtain Synchro 1 = 2nd Curtain Synchro 0xFFFFFFFF = Invalid value

5.2.40 kEdsPropID_RedEye

Description

Indicates red-eye reduction.

Target Object

Target object	Access type	Data type number	Data type
EdsImageRef	Read	kEdsDataType_Uint32	EdsUInt32

Value

Value	Description
0	Off
1	On
0xFFFFFFFF	Invalid value

Revision History/Date	Corrections	Reviser	Remarks

5.2.41 kEdsPropID_NoiseReduction

Description

Indicates noise reduction.

Target Object

Target object	Access type	Data type number	Data type
EdsImageRef	Read	kEdsDataType_Uint32	EdsUInt32

Value

Value	Description
0	Off
1	On 1
2	On 2
3	On
4	Auto

Note

- Values 1–3 vary depending on the camera model.

5.2.42 kEdsPropID_PictureStyleCaption

Description

Returns the user-specified picture style caption name at the time of shooting.

This property is valid only for models supporting picture styles.

User-specified picture styles refer to picture styles for which picture style files are read on a host computer and set on a camera.

Target Object

Target object	Access type	Data type number	Data type
EdsImageRef	Read	kEdsDataType_String	EdsChar[]

Value

ASCII text strings up to 32 characters, including null-terminated strings.

5.2.43 kEdsPropID_CurrentStorage

Description

Gets the current storage media for the camera.

Target Object

Target object	Access type	Data type number	Data type
EdsCameraRef	Read	kEdsDataType_String	EdsChar[]

Value

Current media name (“CF”, “SD”, “HDD”)

Revision History/Date		Corrections	Reviser	Remarks

5.2.44 kEdsPropID_CurrentFolder

Description

Gets the current folder for the camera.

Target Object

Target object	Access type	Data type number	Data type
EdsCameraRef	Read	kEdsDataType_String	EdsChar[]

Value

Current folder name

5.2.45 kEdsPropID_LensStatus

Description

Returns the camera state of whether the lens attached to the camera.

Target Object

Target object	Access type	Data type number	Data type
EdsCameraRef	Read	kEds_EdsUInt32	EdsUInt32

Value

Returns the lens name as an EdsUInt32 value.

Value	Description
0	The lens is not attached.
1	The lens is attached

Note

This property is supported only for model of EOS Series..

5.2.46 kEdsPropID_LensName

Description

Returns the lens name at the time of shooting.

This property can only be retrieved from images shot using models supporting picture styles.

Target Object

Target object	Access type	Data type number	Data type
EdsImageRef	Read	kEdsDataType_String	EdsChar[]

Value

Returns the lens name as an ASCII string.

Note

This property is supported only for model of EOS Series.

Revision History/Date	Corrections	Reviser	Remarks

5.2.47 kEdsPropID_DC_Zoom

Description

Indicates the zoom step.

Target Object

Target object	Access type	Data type number	Data type
EdsCameraRef	Read/Write	kEds_EdsUInt32	EdsUInt32

Value

Depends on the model of the camera. See the value of EdsGetPropertyDesc.

Note

This property is supported only for model of PowerShot Series.

5.2.48 kEdsPropID_DC_Strobe

Description

Indicates the strobe mode type for PowerShot Series.

Target Object

Target object	Access type	Data type number	Data type
EdsCameraRef	Read/Write	kEds_EdsUInt32	EdsUInt32

Value

Values defined in Enum DcStrobe.

Value	Description
0	Auto
1	On
2	Slow Synchro
3	Off

Note

This property is supported only for model of PowerShot Series.

5.2.49 kEdsPropID_LensBarrelStatus

Description

Indicates the lens barrel status.

Target Object

Target object	Access type	Data type number	Data type
EdsCameraRef	Read/Write	kEds_EdsUInt32	EdsUInt32

Value

Values defined in Enum DcLensBarrelState.

Value	Description
0	Inner
1	Outer

Revision History/Date	Corrections	Reviser	Remarks

Note

This property is supported only for model of PowerShot Series.

5.2.50 kEdsPropID_Evf_OutputDevice

Description

Starts/ends live view.

The camera TFT and PC to be used as the output device for live view can be specified.

If a PC only is set for the output device, UI Lock status will be set for the camera except for the SET button.

Target Object

Target object	Access type	Data type number	Data type
EdsCameraRef	Read / Write	kEdsDataType_Uint32	EdsUInt32

Value

Value	Description
1 : KEdsEvfOutputDevice_TFT	Live view is displayed on the camera's TFT
2 : KEdsEvfOutputDevice_PC	The live view image can be transferred to the PC

5.2.51 kEdsPropID_Evf_Mode

Description

Gets/sets live view function settings.

Target Object

Target object	Access type	Data type number	Data type
EdsCameraRef	Read / Write	kEdsDataType_Uint32	EdsUInt32

Value

Value	Description
0	Disable
1	Enable

5.2.52 kEdsPropID_Evf_WhiteBalance

Description

Gets/sets the white balance of the live view image.

The white balance for the live view image can be set separately from that for the image being shot.

Target Object

Target object	Access type	Data type number	Data type
EdsCameraRef	Read / Write	kEdsDataType_Uint32	EdsUInt32

Value

This is the same as kEdsPropID_WhiteBalance.

Revision History/Date	Corrections	Reviser	Remarks

5.2.53 kEdsPropID_Evf_ColorTemperature

Description

Gets/sets the color temperature of the live view image.

Just as with the white balance setting for the live view image, the color temperature for the live view image can also be set separately from that for the image being shot.

This is applied to the image only when the live view white balance is set to Color temperature.

Target Object

Target object	Access type	Data type number	Data type
EdsCameraRef	Read / Write	kEdsDataType_UInt32	EdsUInt32

Value

This is the same as kEdsPropID_ColorTemperature.

5.2.54 kEdsPropID_Evf_DepthOfFieldPreview

Description

Turns the depth of field ON/OFF during Preview mode.

If kEdsEvfOutputDevice is set to KEdsEvfOutputDevice_PC and depth of field is being used, the camera will be put in UI Lock status.

Target Object

Target object	Access type	Data type number	Data type
EdsCameraRef	Read / Write	kEdsDataType_UInt32	EdsUInt32

Value

Value	Description
0	OFF
1	ON

Note

This property is supported only for model of EOS Series.

5.2.55 kEdsPropID_Evf_Zoom

Description

Gets/sets the zoom ratio for the live view.

The zoom ratio is set using EdsCameraRef, but obtained using live view image data, in other words, by using EdsEvfImageRef.

Target Object

Target object	Access type	Data type number	Data type
EdsCameraRef	Write	kEdsDataType_UInt32	EdsUInt32
EdsEvfImageRef	Read	kEdsDataType_UInt32	EdsUInt32

Value

Value	Description
1 : kEdsEvfZoom_Fit	Entire screen
5 : kEdsEvfZoom_x5	5 times
10 : kEdsEvfZoom_x10	10 times

Revision History/Date	Corrections	Reviser	Remarks

Note

This property is supported only for model of EOS Series.

5.2.56 kEdsPropID_Evf_ZoomPosition

Description

Gets/sets the focus and zoom border position for live view.

The focus and zoom border is set using EdsCameraRef, but obtained using live view image data, in otherwords, by using EdsEvfImageRef.

Target Object

Target object	Access type	Data type number	Data type
EdsCameraRef	Write	kEdsDataType_Point	EdsPoint
EdsEvfImageRef	Read	kEdsDataType_Point	EdsPoint

Value

The coordinates are the upper left coordinates of the focus and zoom border. These values expressed in a coordinate system of kEdsPropID_Evf_CoordinateSystem.

Note

The size of the focus and zoom border is one fifth the size of kEdsPropID_Evf_CoordinateSystem when 5x zoom or the entire screen is used, and one tenth the size of kEdsPropID_Evf_CoordinateSystem when 10x zoom is used. The coordinate set through this property will be rounded to the nearest amount that is available in the camera.

5.2.57 kEdsPropID_Evf_ZoomRect

Description

Gets the focus and zoom border rectangle for live view.

The focus and zoom border is obtained using EdsEvfImageRef.

Target Object

Target object	Access type	Data type number	Data type
EdsEvfImageRef	Read	kEdsDataType_Point	EdsRect

Value

The “point” member is the upper left coordinates of the focus and zoom border. And the “size” member is the rectangle of focus border size. These values expressed in a coordinate system of kEdsPropID_Evf_CoordinateSystem.

5.2.58 kEdsPropID_Evf_ImagePosition

Description

Gets the cropping position of the enlarged live view image.

Target Object

Target object	Access type	Data type number	Data type
EdsEvfImageRef	Read	kEdsDataType_Point	EdsPoint

Value

The coordinates used are the upper left coordinates of the enlarged image. These values expressed in a coordinate system of kEdsPropID_Evf_CoordinateSystem.

Revision History/Date	Corrections	Reviser	Remarks

5.2.59 kEdsPropID_Evf_CoordinateSystem

Description

Get the coordinate system of the live view image.

Target Object

Target object	Access type	Data type number	Data type
EdsEvfImageRef	Read	kEdsDataType_Point	EdsSize

Value

The coordinate system is used to express each value of the live view image.

See Also

kEdsPropID_Evf_ZoomPosition

kEdsPropID_Evf_ZoomRect

kEdsPropID_Evf_ImagePosition

5.2.60 kEdsPropID_Evf_HistogramY

Description

Gets the histogram for live view image data.

The histogram can be used to obtain Y.

Target Object

Target object	Access type	Data type number	Data type
EdsEvfImageRef	Read	kEdsDataType_ByteBlock	EdsUInt32[]

Value

The histogram stores data in the form $Y(0) \dots Y(n)$ ($0 \leq n \leq 255$).

Cumulative values in the histogram differ from the total number of pixels in the image data.

5.2.61 kEdsPropID_Evf_HistogramR

Description

Gets the histogram for live view image data.

The histogram can be used to obtain R.

Target Object

Target object	Access type	Data type number	Data type
EdsEvfImageRef	Read	kEdsDataType_ByteBlock	EdsUInt32[]

Value

The histogram stores data in the form $R(0) \dots R(n)$ ($0 \leq n \leq 255$).

Cumulative values in the histogram differ from the total number of pixels in the image data.

5.2.62 kEdsPropID_Evf_HistogramG

Description

Gets the histogram for live view image data.

Revision History/Date	Corrections	Reviser	Remarks

The histogram can be used to obtain G.

Target Object

Target object	Access type	Data type number	Data type
EdsEvfImageRef	Read	kEdsDataType_ByteBlock	EdsUInt32[]

Value

The histogram stores data in the form $G(0) \dots G(n)$ ($0 \leq n \leq 255$).

Cumulative values in the histogram differ from the total number of pixels in the image data.

5.2.63 kEdsPropID_Evf_HistogramB

Description

Gets the histogram for live view image data.

The histogram can be used to obtain B.

Target Object

Target object	Access type	Data type number	Data type
EdsEvfImageRef	Read	kEdsDataType_ByteBlock	EdsUInt32[]

Value

The histogram stores data in the form $B(0) \dots B(n)$ ($0 \leq n \leq 255$).

Cumulative values in the histogram differ from the total number of pixels in the image data.

5.2.64 kEdsPropID_Evf_HistogramStatus

Description

Gets the display status of the histogram.

The display status of the histogram varies depending on settings such as whether live view exposure simulation is ON/OFF, whether strobe shooting is used, whether bulb shooting is used, etc.

Target Object

Target object	Access type	Data type number	Data type
EdsEvfImageRef	Read	kEdsDataType_Uint32	EdsUInt32

Value

Value	Description
0 : kEdsEvfHistogramStatus_Hide	Hide the histogram
1 : kEdsEvfHistogramStatus_Normal	Display the histogram
2: kEdsEvfHistogramStatus_Grayout	Grayout the histogram

5.2.65 kEdsPropID_Evf_AFMode

Description

Set/Get the AF mode for the live view.

Target Object

Target object	Access type	Data type number	Data type
EdsCameraRef	Read / Write	kEdsDataType_Uint32	EdsUInt32

Revision History/Date	Corrections	Reviser	Remarks

Value

Value	Description
0 : Evf_AFMode_Quick	Quick Mode
1 : Evf_AFMode_Live	1-point AF (Live Mode)
2 : Evf_AFMode_LiveFace	Face+Tracking (Live Face Mode)
3 : Evf_AFMode_LiveMulti	FlexiZone - Multi
4 : Evf_AFMode_LiveZone	Zone AF
5 : Evf_AFMode_LiveSingleExpandCross	Expand AF area
6 : Evf_AFMode_LiveSingleExpandSurround	Expand AF area:Around
7 : Evf_AFMode_LiveZoneLargeH	Large Zone AF: Horizontal
8 : Evf_AFMode_LiveZoneLargeV	Large Zone AF: Vertical
9 : Evf_AFMode_Catch	Tracking AF *1
10 : Evf_AFMode_Spot	Spot AF

Notes: *1 Remote capture functions are not supported.

Revision History/Date	Corrections	Reviser	Remarks

5.2.66 kEdsPropID_Record

Description

You can begin/end movie shooting.

There are steps you need to follow to control movie shooting remotely. For details, please refer to the Appendix 6.4.

Target Object

Target object	Access type	Data type number	Data type
EdsCameraRef	Read / Write	kEdsDataType_Uint32	EdsUInt32

Value

Value	Description
0	End movie shooting
4	Begin movie shooting

5.2.67 kEdsPropID_GPSVersionID

Description

Indicates the version of GPSInfoIFD.

Target Object

Target object	Access type	Data type number	Data type
EdsImageRef	Read	kEdsDataType_Uint8	EdsUInt8

5.2.68 kEdsPropID_GPSLatitudeRef

Description

Indicates whether the latitude is north or south latitude. The value 'N' indicates north latitude, and 'S' is south latitude.

Target Object

Target object	Access type	Data type number	Data type
EdsImageRef	Read	kEdsDataType_String	EdsChar[]

Value

Value	Description
'N'	North latitude
'S'	South latitude

5.2.69 kEdsPropID_GPSLatitude

Description

Indicates the latitude. The latitude is expressed as three RATIONAL values giving the degrees, minutes, and seconds, respectively.

Target Object

Target object	Access type	Data type number	Data type
EdsImageRef	Read	kEdsDataType_Rational_Array	EdsRational[]

Revision History/Date	Corrections	Reviser	Remarks

5.2.70 kEdsPropID_GPSLongitudeRef

Description

Indicates whether the longitude is east or west longitude. 'E' indicates east longitude, and 'W' is west longitude.

Target Object

Target object	Access type	Data type number	Data type
EdsImageRef	Read	kEdsDataType_String	EdsChar[]

Value

Value	Description
'E'	East longitude
'W'	West longitude

5.2.71 kEdsPropID_GPSLongitude

Description

Indicates the longitude. The longitude is expressed as three RATIONAL values giving the degrees, minutes, and seconds, respectively.

Target Object

Target object	Access type	Data type number	Data type
EdsImageRef	Read	kEdsDataType_Rational_Array	EdsRational[]

5.2.72 kEdsPropID_GPSAltitudeRef

Description

Indicates the altitude used as the reference altitude. If the reference is sea level and the altitude is above sea level, 0 is given. If the altitude is below sea level, a value of 1 is given and the altitude is indicated as an absolute value in the GPSAltitude. The reference unit is meters.

Target Object

Target object	Access type	Data type number	Data type
EdsImageRef	Read	kEdsDataType_UInt8	EdsUInt8

Value

Value	Description
0	Sea level
1	Sea level reference (negative value)

5.2.73 kEdsPropID_GPSAltitude

Description

Indicates the altitude based on the reference in GPSAltitudeRef. Altitude is expressed as one RATIONAL value. The reference unit is meters.

Target Object

Target object	Access type	Data type number	Data type
EdsImageRef	Read	kEdsDataType_Rational	EdsRational

Revision History/Date	Corrections	Reviser	Remarks

5.2.74 kEdsPropID_GPSTimeStamp

Description

Indicates the time as UTC (Coordinated Universal Time). TimeStamp is expressed as three RATIONAL values giving the hour, minute, and second.

Target Object

Target object	Access type	Data type number	Data type
EdsImageRef	Read	kEdsDataType_Rational_Array	EdsRational[]

5.2.75 kEdsPropID_GPSSatellites

Description

Indicates the GPS satellites used for measurements.

Target Object

Target object	Access type	Data type number	Data type
EdsImageRef	Read	kEdsDataType_String	EdsChar[]

5.2.76 kEdsPropID_GPSMapDatum

Description

Indicates the geodetic survey data used by the GPS receiver.

Target Object

Target object	Access type	Data type number	Data type
EdsImageRef	Read	kEdsDataType_String	EdsChar[]

5.2.77 kEdsPropID_GPSDateStamp

Description

A character string recording date and time information relative to UTC (Coordinated Universal Time). The format is "YYYY:MM:DD." The length of the string is 11 bytes including NULL.

Target Object

Target object	Access type	Data type number	Data type
EdsImageRef	Read	kEdsDataType_Strnig	EdsChar[]

5.2.78 kEdsPropID_GPSStatus

Description

Indicates the status of the GPS receiver when the image is recorded. 'A' means measurement is in progress, and 'V' means the measurement is Interoperability.

Target Object

Target object	Access type	Data type number	Data type
EdsImageRef	Read	kEdsDataType_Strnig	EdsChar[]

Value

Value	Description
'A'	Measurement is in progress
'W'	Measurement is Interoperability

Revision History/Date	Corrections	Reviser	Remarks

6. Appendix

6.1 Using the EDS DK

In order to install an application built using EDS DK on a computer where it will be executed, that computer must be set up as an environment that can execute EDS DK for the application installer.

Windows version

Be sure to copy all EDS DK modules into the application sub folder.

Note1:

Be absolutely sure when you overwrite the old version of the library whenever a new version of EDS DK becomes available. We recommend that you copy files while comparing file versions of the library.

Note2:

Do not copy the EDS DK module to the Windows System folder or Windows folder.

Note3:

In order to connect to an Canon digital camera, the correct device driver software must be installed and a connection between the camera and the host PC must be established. (Driver software is not needed when using a camera model that performs PTP communications.) For details, see the installation method for drivers in the software installation guide included with your Canon digital camera.

Macintosh version

Be sure to copy EDS DK.framework into the application folder.

`${AppFolder}/Contents/frameworks/`

*Do not individually change or delete files in the EDS DK.framework folder.

Note1:

Be absolutely sure when you overwrite the old version of the library whenever a new version of EDS DK becomes available. We recommend that you copy files while comparing file versions of the library.

Note2:

Do not copy the EDS DK module to extention folders in addition to system folders.

Revision History/Date		Corrections	Reviser	Remarks

6.2 Data Types Used by the APIs

Data types defined under EDSDK are listed in EDSDKTypes.h in C language format. This section introduces data types unique to EDSDK that are used by EDSDK APIs.

*For the most recent type definitions, see the header file EDSDKTypes.h.

6.2.1 EdsDirectoryItemInfo

This structure represents directory item information for the memory card in the camera. It is specified as an argument to EdsGetDirectoryItemInfo.

```
typedef struct tagEdsDirectoryItemInfo {
    EdsUInt64 size;
    EdsBool isFolder;
    EdsUInt32 groupID;
    EdsUInt32 option;
    EdsChar szFileName[ EDS_MAX_NAME ];
    EdsUInt32 format;
    EdsUInt32 dateTime;
} EdsDirectoryItemInfo;
```

6.2.2 EdsPropertyDesc

This structure represents a list of settable property data. It is specified as an argument to EdsGetPropertyDesc.

```
typedef struct tagEdsPropertyDesc {
    EdsInt32 form;
    EdsAccess access;
    EdsInt32 numElements;
    EdsInt32 propDesc[128];
} EdsPropertyDesc;
```

6.2.3 EdsPoint

This structure is generally used to represent a set of coordinates.

```
typedef struct tagEdsPoint {
    EdsInt32 x;
    EdsInt32 y;
} EdsPoint;
```

6.2.4 EdsSize

This structure generally represents the width and height of a rectangle.

```
typedef struct tagEdsSize {
    EdsInt32 width;
    EdsInt32 height;
} EdsSize;
```

Revision History/Date	Corrections	Reviser	Remarks

6.2.5 EdsRect

This structure is generally used to indicate the coordinates of a rectangle.

```
typedef struct tagEdsRect {
    EdsPoint    point;
    EdsSize     size;
} EdsRect;
```

6.2.6 EdsImageInfo

This structure represents various information found in image data.

It is specified as an argument to EdsGetImageInfo.

```
typedef struct tagEdsImageInfo{
    EdsUInt32 width;           // image width
    EdsUInt32 height;          // image height

    EdsUInt32 numOfComponents; // number of color components in image.
    EdsUInt32 componentDepth;  // bits per sample. 8 or 16.

    EdsRect          effectiveRect; // Effective rectangles except
                                   // a black line of the image.
                                   // A black line might be in the top and bottom
                                   // of the thumbnail image.

    EdsUInt32 reserved1; // Reserved 1
    EdsUInt32 reserved2; // Reserved 2
}EdsImageInfo;
```

6.2.7 EdsTime

This structure represents the camera time or the shooting date of an image.

It is used to store kEdsPropID_DateTime property data.

```
typedef struct tagEdsTime{
    EdsUInt32 year;           // year
    EdsUInt32 month;          // month 1=January, 2=February, ...
    EdsUInt32 day;            // day
    EdsUInt32 hour;           // hour
    EdsUInt32 minute;         // minute
    EdsUInt32 second;         // second
    EdsUInt32 milliseconds;   // reserved
} EdsTime;
```

Revision History/Date	Corrections	Reviser	Remarks

6.2.8 EdsFocusPoint

This structure represents the AF frame information of focus information.
It stores AF frame information of the kEdsPropID_FocusInfo property.

```
typedef struct tagEdsFrameDesc{
    EdsUInt32    valid;           // if the frame is valid.
    EdsUInt32    justFocus;       // if the frame is just focus.
    EdsRect      rect;           // rectangle of the frame.
    EdsUInt32    reserved;       // reserved
} EdsFocusPoint;
```

6.2.9 EdsFocusInfo

This structure represents focus information.
It stores kEdsPropID_FocusInfo property data.

```
typedef struct tagEdsFocusInfo {
    EdsRect      imageRect;       // rectangle of the image.
    EdsUInt32    pointNumber;     // number of frames.
    EdsFocusPoint focusPoint[600]; // each frame's description.
    EdsUInt32    executeMode;     // execute mode
}EdsFocusInfo;
```

6.2.10 EdsRational

This structure is generally used to represent fractions.
It is used with many properties such as kEdsPropID_Av and kEdsPropID_Tv.

```
typedef struct tagEdsRational {
    EdsInt32    numerator;
    EdsUInt32    denominator;
} EdsRational;
```

6.2.11 EdsPictureStyleDesc

Use this structure when retrieving picture styles.

```
typedef struct tagEdsPictureStyleDesc {
    EdsInt32    contrast;
    EdsUInt32    sharpness;
    EdsInt32    saturation;
    EdsInt32    colorTone;
    EdsUInt32    filterEffect;
    EdsUInt32    toningEffect;
    EdsUInt32    sharpFineness;
    EdsUInt32    sharpThreshold;
}EdsPictureStyleDesc;
```

Revision History/Date	Corrections	Reviser	Remarks

6.3 Sample Code

This sample code is written in C++.

6.3.1 SAMPLE1 From initializing to finalizing

```
void applicationRun()
{
    EdsError err = EDS_ERR_OK;
    EdsCameraRef camera = NULL;
    bool isSDKLoaded = false;

    // Initialize SDK
    err = EdsInitializeSDK();
    if(err == EDS_ERR_OK)
    {
        isSDKLoaded = true;
    }

    // Get first camera
    if(err == EDS_ERR_OK)
    {
        // See Sample 2.
        err = getFirstCamera (&camera);
    }

    // Set Object event handler
    if(err == EDS_ERR_OK)
    {
        err = EdsSetObjectEventHandler(camera, kEdsObejctEvent_All,
                                         handleObjectEvent, NULL);
    }

    // Set Property event handler
    if(err == EDS_ERR_OK)
    {
        err = EdsSetPropertyEventHandler(camera, kEdsPropertyEvent_All,
                                           handlePropertyEvent, NULL);
    }

    // Set State event handler
    if(err == EDS_ERR_OK)
    {
        err = EdsSetCameraStateEventHandler(camera, kEdsStateEvent_All,
                                              handleStateEvent, NULL);
    }

    // Open session with camera
}
```

Revision History/Date	Corrections	Reviser	Remarks

```

if(err == EDS_ERR_OK)
{
    err = EdsOpenSession(camera);
}

/////
// do something
////

// Close session with camera
if(err == EDS_ERR_OK)
{
    err = EdsCloseSession(camera);
}

// Release camera
if(camera != NULL)
{
    EdsRelease(camera);
}

// Terminate SDK
if(isSDKLoaded)
{
    EdsTerminateSDK();
}
}

EdsError EDSCALLBACK handleObjectEvent( EdsObjectEvent event,
                                         EdsBaseRef object,
                                         EdsVoid * context)
{
    // do something

    /*
    switch(event)
    {
        case kEdsObjectEvent_DirItemRequestTransfer:
            downloadImage(object);
            break;

        default:
            break;
    }
    */

    // Object must be released
    if(object)

```

Revision History/Date	Corrections	Reviser	Remarks


```

    {
        EdsRelease(object);
    }
}

EdsError EDSCALLBACK handlePropertyEvent (EdsPropertyEvent event,
                                           EdsPropertyID property,
                                           EdsVoid * context)
{
    // do something
}

EdsError EDSCALLBACK handleStateEvent (EdsCameraStateEvent event,
                                        EdsUInt32 parameter,
                                        EdsVoid * context)
{
    // do something
}

```

6.3.2 SAMPLE2 Getting a camera object

```

EdsError getFirstCamera(EdsCameraRef *camera)
{
    EdsError err = EDS_ERR_OK;
    EdsCameraListRef cameraList = NULL;
    EdsUInt32 count = 0;

    // Get camera list
    err = EdsGetCameraList(&cameraList);

    // Get number of cameras
    if(err == EDS_ERR_OK)
    {
        err = EdsGetChildCount(cameraList, &count);
        if(count == 0)
        {
            err = EDS_ERR_DEVICE_NOT_FOUND;
        }
    }

    // Get first camera retrieved
    if(err == EDS_ERR_OK)
    {
        err = EdsGetChildAtIndex(cameraList, 0, camera);
    }

    // Release camera list
    if(cameraList != NULL)
    {

```

Revision History/Date	Corrections	Reviser	Remarks

```

        EdsRelease(cameraList);
        cameraList = NULL;
    }
    return err;
}

```

6.3.3 SAMPLE3 Getting a property

```

EdsError getTv(EdsCameraRef camera, EdsUInt32 *Tv)
{
    EdsError err = EDS_ERR_OK;
    EdsDataType dataType;
    EdsUInt32 dataSize;

    err = EdsGetPropertySize(camera, kEdsPropID_Tv, 0, &dataType, &dataSize);

    if(err == EDS_ERR_OK)
    {
        err = EdsGetPropertyData(camera, kEdsPropID_Tv, 0, dataSize, Tv);
    }

    return err;
}

```

6.3.4 SAMPLE4 Getting a propertydesc

```

EdsError getTvDesc(EdsCameraRef camera, EdsPropertyDesc *TvDesc)
{
    EdsError err = EDS_ERR_OK;

    err = EdsGetPropertyDesc(camera, kEdsPropID_Tv, TvDesc);

    return err;
}

```

6.3.5 SAMPLE5 Setting a property

```

EdsError setTv(EdsCameraRef camera, EdsUInt32 TvValue)
{
    err = EdsSetPropertyData(camera, kEdsPropID_Tv, 0, sizeof(TvValue), &TvValue);

    return err;
}

```

Revision History/Date		Corrections	Reviser	Remarks

6.3.6 SAMPLE6 Downloading an image

```

EdsError downloadImage(EdsDirectoryItemRef directoryItem)
{
    EdsError err = EDS_ERR_OK;
    EdsStreamRef stream = NULL;

    // Get directory item information
    EdsDirectoryItemInfo dirItemInfo;
    err = EdsGetDirectoryItemInfo(directoryItem, &dirItemInfo);

    // Create file stream for transfer destination
    if(err == EDS_ERR_OK)
    {
        err = EdsCreateFileStream( dirItemInfo.szFileName,
                                   kEdsFile_CreateAlways,
                                   kEdsAccess_ReadWrite, &stream);
    }

    // Download image
    if(err == EDS_ERR_OK)
    {
        err = EdsDownload( directoryItem, dirItemInfo.size, stream);
    }

    // Issue notification that download is complete
    if(err == EDS_ERR_OK)
    {
        err = EdsDownloadComplete(directoryItem);
    }

    // Release stream
    if( stream != NULL)
    {
        EdsRelease(stream);
        stream = NULL;
    }

    return err;
}

```

6.3.7 SAMPLE7 Getting a file object

```

EdsError getVolume(EdsCameraRef camera, EdsVolumeRef * volume)
{
    EdsError err = EDS_ERR_OK;
    EdsUInt32 count = 0;

```

Revision History/Date	Corrections	Reviser	Remarks

```

// Get the number of camera volumes
err = EdsGetChildCount(camera, &count);
if(err == EDS_ERR_OK && count == 0)
{
    err = EDS_ERR_DIR_NOT_FOUND;
}

// Get initial volume
if(err == EDS_ERR_OK)
{
    err = EdsGetChildAtIndex(camera, 0, &volume);
}

return err;
}

```

6.3.8 SAMPLE8 Getting DCIM Folder

```

EdsError getDCIMFolder(EdsVolumeRef volume, EdsDirectoryItemRef * directoryItem)
{
    EdsError err = EDS_ERR_OK;
    EdsDirectoryItemRef dirItem = NULL;
    EdsDirectoryItemInfo dirItemInfo;
    EdsUInt32 count = 0;

    // Get number of items under the volume
    err = EdsGetChildCount(volume, &count);
    if(err == EDS_ERR_OK && count == 0)
    {
        err = EDS_ERR_DIR_NOT_FOUND;
    }

    // Get DCIM folder
    for(int i = 0; i < count && err == EDS_ERR_OK; i++)
    {
        // Get the ith item under the specified volume
        if(err == EDS_ERR_OK)
        {
            err = EdsGetChildAtIndex(volume, i, &dirItem);
        }

        // Get retrieved item information
        if(err == EDS_ERR_OK)
        {
            err = EdsGetDirectoryItemInfo(dirItem, &dirItemInfo);
        }

        // Indicates whether or not the retrieved item is a DCIM folder.
        if(err == EDS_ERR_OK)
        {
            if(_stricmp(dirItemInfo.szFileName, "DCIM") == 0 &&
                dirItemInfo.isFolder == true)
            {
                directoryItem = &dirItem;
            }
        }
    }
}

```

Revision History/Date	Corrections	Reviser	Remarks

```

        break;
    }
}

// Release retrieved item
if(dirItem)
{
    EdsRelease(dirItem);
    dirItem = NULL;
}
}

return err;
}

```

6.3.9 SAMPLE9 Taking a picture

```

EdsError takePicture(EdsCameraRef camera)
{
    EdsError err;

    err = EdsSendCommand(camera, kEdsCameraCommand_PressShutterButton
        , kEdsCameraCommand_ShutterButton_Completely);

    err = EdsSendCommand(camera, kEdsCameraCommand_PressShutterButton
        , kEdsCameraCommand_ShutterButton_OFF);

    return err;
}

```

6.3.10 SAMPLE10 Live view

```

EdsError startLiveview(EdsCameraRef camera)
{
    EdsError err = EDS_ERR_OK;

    // Get the output device for the live view image
    EdsUInt32 device;
    err = EdsGetPropertyData(camera, kEdsPropID_Evf_OutputDevice, 0, sizeof(device), &device);

    // PC live view starts by setting the PC as the output device for the live view image.
    if(err == EDS_ERR_OK)
    {
        device |= kEdsEvfOutputDevice_PC;

        err = EdsSetPropertyData(camera, kEdsPropID_Evf_OutputDevice, 0, sizeof(device), &device);
    }

    // A property change event notification is issued from the camera if property settings are made successfully.
    // Start downloading of the live view image once the property change notification arrives.

    return err;
}

```

```

EdsError downloadEvfData(EdsCameraRef camera)

```

Revision History/Date	Corrections	Reviser	Remarks

```

{
    EdsError err = EDS_ERR_OK;

    EdsStreamRef stream = NULL;
    EdsEvfImageRef evfImage = NULL;

    // Create memory stream.
    err = EdsCreateMemoryStream( 0, &stream);

    // Create EvfImageRef.
    if(err == EDS_ERR_OK)
    {
        err = EdsCreateEvfImageRef(stream, &evfImage);
    }

    // Download live view image data.
    if(err == EDS_ERR_OK)
    {
        err = EdsDownloadEvfImage(camera, evfImage);
    }

    // Get the incidental data of the image.
    if(err == EDS_ERR_OK)
    {
        // Get the zoom ratio
        EdsUInt32 zoom;
        EdsGetPropertyData(evfImage, kEdsPropID_Evf_ZoomPosition, 0, sizeof(zoom), &zoom);

        // Get the focus and zoom border position
        EdsPoint point;
        EdsGetPropertyData(evfImage, kEdsPropID_Evf_ZoomPosition, 0, sizeof(point), &point);
    }

    //
    // Display image
    //

    // Release stream
    if(stream != NULL)
    {
        EdsRelease(stream);
        stream = NULL;
    }

    // Release evfImage
    if(evfImage != NULL)
    {
        EdsRelease(evfImage);
        evfImage = NULL;
    }
    return err;
}

EdsError endLiveview(EdsCameraRef camera)
{
    EdsError err = EDS_ERR_OK;

```

Revision History/Date	Corrections	Reviser	Remarks

```

// Get the output device for the live view image
EdsUInt32 device;
err = EdsGetPropertyData(camera, kEdsPropID_Evf_OutputDevice, 0, sizeof(device), &device );

// PC live view ends if the PC is disconnected from the live view image output device.
if(err == EDS_ERR_OK)
{
    device &= ~kEdsEvfOutputDevice_PC;

    err = EdsSetPropertyData(camera, kEdsPropID_Evf_OutputDevice, 0, sizeof(device), &device);
}
return err;
}

```

Revision History/Date	Corrections	Reviser	Remarks

6.4 Steps to begin/end movie shooting remotely

Unlike in the case of still image shooting, we cannot transfer a movie file stored on camera's memory directly to PC. The movie file will be recorded to the inserted memory card in the camera. So memory card must be inserted to the camera to shoot a movie.

Please follow the following steps to be ready to begin/end movie shooting remotely.

6.4.1 Set camera as the destination to save file

To prepare to shoot movie, you must set camera as the destination to save file.

```
-----
EdsUInt32 saveTo = kEdsSaveTo_Camera;
err = EdsSetPropertyData(cameraRef, kEdsPropID_SaveTo, 0, sizeof(saveTo), &saveTo);
-----
```

6.4.2 Set the camera to movie shooting mode

< Movie shooting switch supported camera >

Camera which has Movie shooting switch or Movie shooting mode in the mode dial, set the switch or dial to the movie shooting mode. Then the Live View will automatically start and the camera will be ready to shoot movie.

< Movie shooting switch unsupported camera >

Camera which doesn't have Movie shooting switch or Movie shooting mode in the mode dial, enable movie recording in the Live View settings. Then if you start remote Live View like in the case of still image shooting the Live View will start in movie shooting mode.

6.4.3 Begin/End movie shooting

You can begin/end movie shooting with the following operations.

```
-----
EdsUInt32 record_start = 4; // Begin movie shooting
err = EdsSetPropertyData(cameraRef, kEdsPropID_Record, 0, sizeof(record_start), &record_start);
-----
```

```
EdsUInt32 record_stop = 0; // End movie shooting
err = EdsSetPropertyData(cameraRef, kEdsPropID_Record, 0, sizeof(record_stop), &record_stop);
-----
```

6.4.4 To get movie file

Once the movie file is created in the memory card, the kEdsObjectEvent_DirItemCreated event will be published and the EdsDirectoryItemRef of the movie file will be noticed from the camera.

After you end movie shooting mode, you can download the movie file to your PC using EdsDirectoryItemRef, which has been noticed by the camera, by following the steps written in "6.3.6 SAMPLE6 Downloading an image."

Revision History/Date	Corrections	Reviser	Remarks

6.5 Past History

Version	Date	Reason and content of revision
1.0	9/14/2006	First release
2.0	5/28/2007	<ul style="list-style-type: none"> Added support for Windows Vista. Added support for the EOS-1D Mark III. Added operations and properties related to PC live view (only for supported models). <p>Objects</p> <p>EdsEvfImageRef</p> <p>API.</p> <p>EdsCreateEvfImageRef</p> <p>EdsDownloadEvfImage</p> <p>Commands</p> <p>kEdsCameraCommand_DriveLensEvf</p> <p>kEdsCameraCommand_DoClickWBEvf</p> <p>Properties</p> <p>kEdsPropID_Evf_OutputDevice</p> <p>kEdsPropID_Evf_Mode</p> <p>kEdsPropID_Evf_WhiteBalance</p> <p>kEdsPropID_Evf_ColorTemperature</p> <p>kEdsPropID_Evf_DepthOffFieldPreview</p> <p>kEdsPropID_Evf_Sharpness kEdsPropID_Evf_ClickWBCoeffs</p> <p>kEdsPropID_Evf_Zoom</p> <p>kEdsPropID_Evf_ZoomPosition</p> <p>kEdsPropID_Evf_Histogram</p> <p>kEdsPropID_Evf_ImagePosition</p> <p>kEdsPropID_Evf_HistogramStatus</p> <ul style="list-style-type: none"> Added commands and events for bulb shooting (only for supported models). <p>Commands</p> <p>kEdsCameraCommand_BulbStart</p> <p>kEdsCameraCommand_BulbEnd</p> <p>Events</p> <p>kEdsStateEvent_BulbExposureTime</p> <ul style="list-style-type: none"> Changed shooting error codes. Changed the data type of KpropID_ImageQuality. Added properties for getting GPS information from image files. <p>kEdsPropID_GPSVersionID</p> <p>kEdsPropID_GPSLatitudeRef</p> <p>kEdsPropID_GPSLatitude</p> <p>kEdsPropID_GPSLongitudeRef</p> <p>kEdsPropID_GPSLongitude</p> <p>kEdsPropID_GPSAltitudeRef</p> <p>kEdsPropID_GPSAltitude</p> <p>kEdsPropID_GPSTimeStamp</p> <p>kEdsPropID_GPSSatellites</p> <p>kEdsPropID_GPSMapDatum</p> <p>kEdsPropID_GPSDateStamp</p>
2.1	8/30/2007	<ul style="list-style-type: none"> Added support for the EOS 40D. Changed the target object supporting ImageQuality property to be a camera object only.
2.2	11/12/2007	<ul style="list-style-type: none"> Added support for the EOS-1Ds Mark III. Added sample code for bulb shooting.
2.3	1/8/2008	<ul style="list-style-type: none"> Added support for the EOS DIGITAL REBEL Xsi/ EOS 450D/ EOS Kiss X2.

Revision History/Date	Corrections	Reviser	Remarks

2.4	5/20/2008	<ul style="list-style-type: none"> Added support for the EOS DIGITAL REBEL XS/ EOS 1000D/ EOS Kiss F. Added support for Mac OSX 10.5.
2.5	10/01/2008	<ul style="list-style-type: none"> Added support for the EOS 50D / EOS 5D Mark II Added properties for getting GPS information from image files. kEdsPropID_GPSStatus Added commands and properties related to PC live view (only for supported models). Commands kEdsCameraCommand_ShutterButton kEdsCameraCommand_DoAfEvf Properties kEdsPropID_Evf_AFMode <ul style="list-style-type: none"> Added properties. kEdsPropID_LensStatus kEdsPropID_Artist kEdsPropID_Copyright <ul style="list-style-type: none"> Stopping support API and properties API EdsReflectImageProperty Properties kEdsPropID_Evf_ClickWBCoeffs kEdsPropID_Evf_Sharpness kEdsPropID_BracketValue kEdsPropID_UserWhiteBalanceData kEdsPropID_UserToneCurveData kEdsPropID_UserPictureStyleData kEdsPropID_UserManualWhiteBalanceData kEdsPropID_PFn
2.5.1	12/9/2008	<ul style="list-style-type: none"> Revised the following properties. kEdsPropID_Sharpness kEdsPropID_ColorMatrix kEdsPropID_ColorSaturation kEdsPropID_Contrast kEdsPropID_ColorTone kEdsPropID_PhotoEffect kEdsPropID_FilterEffect kEdsPropID_ToningEffect Revised table at Section 5.3(Support Status for RAW Properties).
2.5.2	01/23/2009	Supports EOS 5D Mark II firmware Version 1.0.7 (for the vertical banding noise phenomenon)
2.6	04/22/2009	<ul style="list-style-type: none"> Added support for the EOS Kiss X3/EOS REBEL T1i /EOS 500D . Remove the limit of the file size of ICC in EdsSaveImage.
2.7	11/05/2009	Added support for the EOS 7D / EOS-1D Mark IV
2.8	2/15/2010	<ul style="list-style-type: none"> Added support for the EOS Kiss X4/EOS REBEL T2i/EOS 550D Stopping support OS Mac OS 10.3 Added property related to PC live view (only for supported models). kEdsPropID_EVF_ZoomRect kEdsPropID_EVF_CoordinateSystem Revised the following properties. kEdsPropID_Evf_ZoomPosition kEdsPropID_Evf_ZoomRect kEdsPropID_Evf_ImagePosition Reviewed support for the following models (see 1.3 Supported Cameras). EOS-1D Mark II/EOS-1Ds Mark II/EOS-1D Mark II N EOS 5D/EOS 20D/EOS 30D EOS Kiss Digital N (DIGITAL REBEL XT/350D DIGITAL) EOS Kiss Digital X(400D/REBEL Xti)

Revision History/Date	Corrections	Reviser	Remarks

2.8.1	3/15/2010	<ul style="list-style-type: none"> Reviewed support for the following models (see 1.3 Supported Cameras). EOS-1D Mark II/EOS-1Ds Mark II/EOS-1D Mark II N EOS 5D/EOS 20D/EOS 30D EOS Kiss Digital N (DIGITAL REBEL XT/350D DIGITAL) EOS Kiss Digital X(400D/REBEL Xti)
2.9	8/18/2010	<ul style="list-style-type: none"> Added support for the EOS 60D Stopping support OS Windows 2000
2.10	3/7/2011	<ul style="list-style-type: none"> Added support for the EOS Kiss X5/EOS REBEL T3i/EOS 600D and EOS Kiss X50/EOS REBEL T3/EOS 1100D Stopping support OS Mac OS 10.4 Deleted the description of the older model out of support and revised the following properties. kEdsPropID_Sharpness kEdsPropID_ColorMatrix kEdsPropID_ColorSaturation kEdsPropID_Contrast kEdsPropID_ColorTone kEdsPropID_PhotoEffect kEdsPropID_FilterEffect kEdsPropID_ToningEffect Deleted the following properties. kEdsPropID_BodyID Added the following properties. kEdsPropID_BodyIDEx kEdsPropID_PictureStyle (type Auto added)
2.11	5/9/2012	<ul style="list-style-type: none"> Added support for the EOS 5D MarkIII/EOS 1D X/EOS Kiss X6i/EOS 650D/EOS REBEL T4i Added support for Mac OSX 10.7 Stopping support OS Mac OS 10.5 Added the following properties. kEdsPropID_AEModeSelect kEdsPropID_Record Changed following properties to be read only kEdsPropID_AEMode All of the modules in the DLL folder must be copied into the same folder where the EDSDK client application is in. Deleted the following chapter. 1.3.2 Connected Cameras
2.11	6/18/2012	<ul style="list-style-type: none"> Deleted the following properties. kEdsPropID_Evf_Histogram Added the following properties. kEdsPropID_Evf_HistogramY kEdsPropID_Evf_HistogramG kEdsPropID_Evf_HistogramB
2.12	8/22/2012	<ul style="list-style-type: none"> Added support for the EOS M <p>Please note: Remote capture functions are not supported for the EOS M.</p>
2.12	12/11/2012	<ul style="list-style-type: none"> Added support for the EOS 6D / EOS-1D C
2.13	5/9/2013	<ul style="list-style-type: none"> Added support for the EOS Kiss X7i/EOS 700D /EOS REBEL T5i, EOS Kiss X7/EOS 100D/EOS REBEL SL1 Added support for Mac OSX 10.8,Windows8

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2.13	8/19/2013	<ul style="list-style-type: none"> Added support for the EOS 70D
2.14	2/18/2014	<ul style="list-style-type: none"> Added support for the EOS Kiss X70 / EOS 1200D / EOS REBEL T5 / EOS Hi / EOS M2 Please note: Remote capture functions are not supported for the EOS M2
2.15	9/19/2014	<ul style="list-style-type: none"> Added support for the EOS 7D Mark II Added support for Mac OSX 10.9, Windows 8.1 Stopping support OS Mac OS 10.6 / 10.7 , Windows XP / Vista
3.2	5/13/2015	<ul style="list-style-type: none"> Added support for the EOS 5DS / EOS 5DS R / EOS REBEL T6s / EOS 760D / EOS 8000D / EOS REBEL T6i / EOS 750D / EOS Kiss X8i / EOS M3 Please note: Remote capture functions are not supported for the EOS M3 Deleted RAW development functionality. API. EdsSaveImage EdsCacheImage EdsReflectImageProperty Enum. kEdsImageSrc_RAWThumbnail kEdsImageSrc_RAWFullView Struct. EdsSaveImageSetting <ul style="list-style-type: none"> Stopping support properties with EdsImageRef.
3.2.1	8/6/2015	<ul style="list-style-type: none"> Added support for RAW development functionality. Added support for RAW development functionality for the beta version of 64-bit module. Please note: Supported cameras are limited as below for the image handling functions in 64-Bit module. EOS 5DS / EOS 5DS R / EOS REBEL T6s / EOS 760D / EOS 8000D / EOS REBEL T6i / EOS 750D / EOS Kiss X8i / EOS M3
3.4	4/1/2016	<ul style="list-style-type: none"> Added support for the EOS-1D X Mark II / EOS 80D / EOS Rebel T6 / EOS 1300D / EOS Kiss X80 / EOS M10 Please note: Remote capture functions are not supported for the EOS M10 Changed the following interfaces from the previous version to support 64bit data size. EdsDownload EdsCreateMemoryStream EdsCreateMemoryStreamFromPointer EdsRead EdsWrite EdsSeek EdsGetPosition EdsGetLength EdsCopyData
3.5	9/2/2016	<ul style="list-style-type: none"> Added support for the EOS 5D Mark IV
3.6	5/19/2017	<ul style="list-style-type: none"> Added support for the EOS Kiss X9i / EOS Rebel T7i / EOS 800D / EOS 9000D / EOS 77D / EOS M5 / EOS M6 Please note: Remote capture functions are not supported for the EOS M5 EOS M6
3.6.1	7/24/2017	<ul style="list-style-type: none"> Added support for the EOS 6D Mark II / EOS Kiss X9 / EOS Rebel SL2 / EOS 200D
3.8	3/1/2018	<ul style="list-style-type: none"> Added support for the EOS M100 / EOS Kiss M / EOS M50 / EOS Kiss X90 / EOS REBEL T7 / EOS 2000D / EOS 1500D / EOS REBEL T100 / EOS 4000D / EOS 3000D Please note: Remote capture functions are not supported for the EOS M100

Revision History/Date	Corrections	Reviser	Remarks

3.9	9/25/2018	<ul style="list-style-type: none"> Added support for the EOS R Deleted the description of the older model out of support and deleted the following properties. kEdsPropID_ParameterSet kEdsPropID_ColorMatrix kEdsPropID_Sharpness kEdsPropID_ColorSaturation kEdsPropID_Contrast kEdsPropID_ColorTone kEdsPropID_PhotoEffect kEdsPropID_FilterEffect kEdsPropID_ToningEffect
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Revision History/Date	Corrections	Reviser	Remarks