Vimba API

Feature Manual

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ALLIED Vision Technologies

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2 Introduction

2.1 Document history

Version	Date	Changes
1.0	2013-02-20	Initial version
1.1	2013-03-07	Different document generation, small changes
1.2	2013-06-13	Small corrections, layout changes
1.3	2014-08-06	Rework of the whole document

2.2 Conventions used in this manual

To give this manual an easily understood layout and to emphasize important information, the following typographical styles and symbols are used:

2.2.1 Styles

Style	Function	Example
Bold	Programs, inputs or highlighting important things	**bold**
Courier	Code listings etc.	`Input`
Upper case	Constants	CONSTANT
Italics	Modes, fields, features	*Mode*
Blue and/or parentheses	Links	(Link)

2.2.2 Symbols

Note

This symbol highlights important information.

Caution

This symbol highlights important instructions. You have to follow these instructions to avoid malfunctions.

WWW

This symbol highlights URLs for further information. The URL itself is shown in blue.
Example: http://www.alliedvisiontec.com

3 Vimba - Feature Overview

Vimba provides additional functionality that is not directly covered by API functions with GenICam Features. These Features can only be accessed via certain entities within Vimba. According to the API Entity Model described in the Vimba User Guide, the entities providing Feature access are:

- the **Vimba System**, which includes functionality for managing interfaces and cameras.
- the **Interface**, which allows configuration of hardware interfaces (e.g. a GigE port).
- the **Camera**, which allows access to all features provided by camera device, data transport features, and some driver features.
- the **AncillaryData** for each Frame.

Features are described in the following documents:

- Vimba System features are described in chapter Vimba System in this document.
- GigE or 1394 Interface features are handled by the Transport Layer, see chapter "Interface Features" in the AVTGigE Transport Layer Manual and the AVT1394 Transport Layer Manual.
- Camera features control functionality related to cameras, connection settings, and image streams, resulting in an easy way to set up your system for image acquisition.
  A reference for **GigE cameras** can be found in the AVT GigE Camera and Driver Features Manual.

  

  For the latest version for GigE camera features, see the corresponding manual on the AVT website.

  A reference for **1394 cameras** can be found in the AVT1394 Transport Layer Manual. See chapters "Camera Features", "Device Features" and "DataStream Features".
- Ancillary Data features are described in chapter Ancillary Data Features in this document.

4 Vimba System

This chapter lists features that are potentially available in this module. Some features are only available under certain circumstances.

The following categories can be found below the Root category:

- Info
- Discovery
- ForceIP

4.1 Info [AVT]

4.1.1 Elapsed [AVT]

Name	Elapsed
Interface	IFloat
Access	Read/Write
Visibility	Beginner
Values	0.0..

Elapsed time since the API was initialized.

4.1.2 GeVTLIsPresent [AVT]

Name	GeV TL is present
Interface	IBoolean
Access	Read/Write
Visibility	Beginner

The GigE Vision Transport Layer is present and working.

4.1.3 FiWTLIsPresent [AVT]

Name	FiW TL is present
Interface	IBoolean
Access	Read/Write
Visibility	Beginner

The FireWire Transport Layer is present and working.

4.2 Discovery [AVT]

This category contains **features for camera and interface discovery** with Vimba, for example:

- Camera availability
- Notifications about camera availability
- Discovery process for GigE devices

Note

The description below applies to the C API. For more information, see Vimba C Manual, Vimba CPP Manual, or Vimba .NET Manual.

Discovery of GigE cameras

The discovery process of GigE cameras usually takes some time, especially if multiple cameras are connected. Many applications open only one known camera directly without needing to know the changes to other cameras. Consequently, Vimba initially does not discover devices automatically.

- *GeVDiscoveryAllOnce* starts the discovery once to get a complete camera list.
- *GeVDiscoveryAllAuto* detects GigE cameras permanently, which consumes a considerable amount of bandwidth.
- Both commands wait for *GeVDiscoveryAllDuration* milliseconds before returning. This allows you to directly get the list of cameras afterwards.
- *GeVDiscoveryAllOff* stops automatic discovery.

Notifications

Notifications about camera discovery and interface discovery work with the same mechanism:

- *DiscoveryCameraEvent* notifies about changes to the overall camera list and changes of the accessibility status of the cameras. During a notification, querying *DiscoveryCameraIdent* returns the camera change that caused the notification.
- *DiscoveryInterfaceEvent* notifies about interface-related changes, and querying *DiscoveryInterfaceIdent* returns the interface identifier.

Note

For more information, see chapter Using Event in the API manuals.

4.2.1 GeVDiscoveryAllOff [AVT]

Name	GeV Discovery All Off
Interface	ICommand
Access	Read/Write
Visibility	Beginner

Turns devices discovery OFF for all GigE interfaces.

4.2.2 GeVDiscoveryAllAuto [AVT]

Name	GeV Discovery All Auto
Interface	ICommand
Access	Read/Write
Visibility	Beginner

Turns devices discovery ON for all GigE interfaces.

4.2.3 GeVDiscoveryAllOnce [AVT]

Name	GeV Discovery All Once
Interface	ICommand
Access	Read/Write
Visibility	Beginner

Turns devices discovery temporary ON for all GigE interfaces.

4.2.4 GeVDiscoveryAllDuration [AVT]

Name	GeV Discovery All Duration
Interface	IInteger
Access	Read/Write
Visibility	Beginner

The time in ms to wait for response from any device after device discovery was started in mode "Once" or "Auto". Defaults to 150 ms.

4.2.5 DiscoveryCameraIdent [AVT]

Name	Discovery Camera Ident
Interface	IString
Access	Read/Write
Visibility	Beginner

Identifier of the camera that triggered the last camera discovery event.

4.2.6 DiscoveryCameraEvent [AVT]

Name	Discovery Camera Event
Interface	IEnumeration
Access	Read/Write
Visibility	Beginner
Values	Missing Detected Reachable Unreachable

Indicates the last camera discovery event.
Possible values:

- Missing: The camera is missing.
- Detected: The camera was detected.
- Reachable: The camera is reachable (can be talked to).
- Unreachable: The camera is unreachable (cannot be talked to).

4.2.7 DiscoveryInterfaceIdent [AVT]

Name	Discovery Interface Ident
Interface	IString
Access	Read/Write
Visibility	Beginner

Identifier of the interface that triggered the last interface discovery event.

4.2.8 DiscoveryInterfaceEvent [AVT]

Name	Discovery Interface Event
Interface	IEnumeration
Access	Read/Write
Visibility	Beginner
Values	Unavailable Available

Indicates the last interface discovery event.

4.3 ForceIP [AVT]

This category contains features to force port features of a camera that would otherwise be inaccessible via Vimba.

1. Set the MAC address of the used camera in feature *GeVForceIPAddressMAC*
2. Set the required values of *GeVForceIPAddressIP*, *GeVForceIPAddressSubnetMask*, or *GeVForceIPAddressGateway*
3. To send these values to the camera, run *GeVForceIPAddressSend*.

4.3.1 GeVForceIPAddressMAC [AVT]

Name	Camera MAC Address
Interface	IInteger
Access	Read/Write
Visibility	Expert

48-bit MAC address of the camera to force IP setup

4.3.2 GeVForceIPAddressIP [AVT]

Name	Camera's desired IP Address
Interface	IInteger
Access	Read/Write
Visibility	Expert

IP address of the camera to be forced to

4.3.3 GeVForceIPAddressSubnetMask [AVT]

Name	Camera's desired subnet mask
Interface	IInteger
Access	Read/Write
Visibility	Expert

Subnet mask of the camera to be forced to

4.3.4 GeVForceIPAddressGateway [AVT]

Name	Camera's desired gateway
Interface	IInteger
Access	Read/Write
Visibility	Expert

Gateway of the camera to be forced to

4.3.5 GeVForceIPAddressSend [AVT]

Name	Send camera force address
Interface	ICommand
Access	Read/Write
Visibility	Expert

Send the force address command on all interfaces

5 Ancillary Data Features

This chapter lists the available features for Ancillary Data.
The following categories can be found below the Root category:

- ChunkData

5.1 ChunkData [AVT]

Ancillary Data are non-image data that are part of the camera transfers. It relates to GenICam's Chunk Data.
AVT GigE cameras usually don't expose the layout of their Ancillary Data via camera features, but the layout is the same for all cameras. Instead, they only provide feature *ChunkModeActive*, which is disabled be default. To enable transfer of Ancillary Data, set *ChunkModeActive* to "True".

5.1.1 ChunkAcquisitionFrameCount [AVT]

Name	Chunk Acquisition Frame Count
Interface	IInteger
Access	Read
Visibility	Beginner

This is the number of the frame during the current acquisition.

5.1.2 ChunkUserValue [AVT]

Name	Chunk User Value
Interface	IInteger
Access	Read
Visibility	Beginner

User value

5.1.3 ChunkExposureTime [AVT]

Name	Chunk Exposure Time
Interface	IFloat
Access	Read
Visibility	Beginner

Exposure duration, in microseconds.

5.1.4 ChunkGain [AVT]

Name	Chunk Gain
Interface	IFloat
Access	Read/Write
Visibility	Beginner

Gain value of analog A/D stage.
Units are usually in dB.

5.1.5 ChunkSyncInLevels [AVT]

Name	Chunk Sync In Levels
Interface	IInteger
Access	Read/Write
Visibility	Beginner

Momentary logic levels of the hardware line inputs.

5.1.6 ChunkSyncOutLevels [AVT]

Name	Chunk Sync Out Levels
Interface	IInteger
Access	Read/Write
Visibility	Beginner

Output levels of hardware sync outputs, for output(s) in GPO mode.