KAYA's adaptor for Cognex AIK

Data Book

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1 Introduction

1.1 Safety precautions

Please take the time to read through the precautions listed below in order to prevent preventable and unnecessary injuries and damage to you, other personnel or property. Read these safety instructions carefully prior to your first use of the product, as these precautions contain safety instructions that must be observed. Be sure to follow this manual in order to prevent misuse of product.

⚠ Caution! Read Carefully and do not disregard these instructions.
In the event of a failure, disconnect the power supply Disconnect the power supply immediately and contact our sales personnel for repair. Continuing to use the product in this state may result in a fire or electric shock.
If an unpleasant smell or smoking occurs, disconnect the power supply. Disconnect the power supply immediately! Continuing to use the product in this state may result in a fire or electric shock. After verifying that no smoking is observed, contact our sales personnel for repair.
Do not disassemble, repair or modify the product. This may result in a fire or electric shock due to a circuit shortage or heat generation. Contact our sales personnel prior to inspection, modification or repair.
Do not place the product on unstable surfaces. Otherwise, it may drop or fall, resulting in injury to persons or the camera.
Do not use the product if dropped or damaged. Otherwise, a fire or electric shock may occur.
Do not touch the product with metallic objects. Otherwise, a fire or electric shock may occur.
Do not place the product in dusty or humid environments, nor where water may splash. Otherwise, a fire or electric shock may occur.
Do not wet the product or touch it with wet hands. Otherwise, the product may fail or it may cause a fire, smoking or electric shock.
Do not touch the gold-plated sections of the connectors on the product. Otherwise, the surface of the connector may be contaminated by sweat or skin-oil, resulting in contact failure of a connector, malfunction, fire or electric shock due to static electricity discharge.
Do not use or place the product in the following locations. ▪ Unventilated areas such as closets or bookshelves. ▪ Near oils, smoke or steam. ▪ Next to heat sources. ▪ A closed (and not running) car where the temperature becomes high. ▪ Static electricity replete locations ▪ Near water or chemicals. Otherwise, a fire, electric shock, accident or deformation may occur due to a short circuit or heat generation.
Do not place heavy objects on the product. Otherwise, the product may be damaged.
Be sure to discharge static electricity from body before touching any sensitive electronic components. The electronic circuits in your computer and the circuits on the ***Iron*** camera and the ***Predator II*** board are sensitive to static electricity and surges. Improper handling may seriously damage the circuits. In addition, do not let your clothing come in contact with the circuit boards or components. Otherwise, the product may be damaged.

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1.2 Disclaimer

KAYA Instruments will assume no responsibility for any damage that may ensue by the use of this product for any purpose other than intended, as previously stated. Without detracting from what was previously written, please be advised that the company will take no responsibility for any damages caused by:

- Earthquake, thunderstrike, natural disasters, fire caused by use beyond our control, willful and/or accidental misuse and/or use under other abnormal and/or unreasonable conditions.
- Secondary damages caused by the use of this product or its unusable state (business interruption or others).
- Use of this product in any manner that contradicts this manual or malfunctions that may occur due to connection to other devices. Damage to this product that is out of our control or failure due to modification
- Accidents and/or third parties that may be involved.

Additionally, KAYA Instruments assumes no responsibility or liability for:

- Erasure or corruption of data caused by the use of this product.
- Any consequences or other abnormalities following the use of this product

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2 Start-up guide overview

KAYA's SDK implements an adaptor for Cognex "Acquisition Integration Kit (AIK)". Cognex CVL or VisionPro software SDK allows a smooth connection to discovered "Imaging Device Adapter". This grants remote control over cameras and other vision systems equipment and can significantly improve the performance of vision systems in diverse markets.

This document describes the steps to setup and configure KAYA's adaptor for Cognex AIK.

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3 Initial Setup

3.1 Step 1: Install Cognex VisionPro SDK

Please refer to Cognex site www.cognex.com for more information about VisionPro installation.

3.2 Step 2: Install Vision Point for Windows

Download and install Vision Point software from https://kayainstruments.com/software-sdk/
Note that the Cognex AIK adaptor is currently supported only in Windows OS.

Cognex AIK adaptor will be automatically installed in the system with default Vision Point installation package. Configuration registry and needed path variables will provide Cognex CVL or VisionPro software the needed information to load KAYA's adaptor for Cognex AIK.

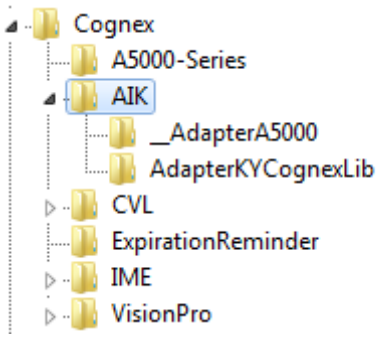
3.3 Step 3: Disable unimplemented adapters

3.3.1 Remove KAYA's GenTL producer

Due to lack of compatibility between Cognex's GenTL consumer and KAYA's GenTL producer, the KYFGLibGenTL*.cti files should be removed from Vision Point installation folder in order not to invoke device enumeration by Cognex's GenTL consumer. If this step is not performed, there might be compatibility issues which will result in unknown behavior. Remove file KYFGLibGenTL*.cti from following path <sdk_installation_path>\KAYA Instruments\Common\bin

3.3.2 Check need of other AIK adaptors

AIK adaptor list and settings can be found in registry category [HKEY_LOCAL_MACHINE\SOFTWARE\Cognex\AIK]. "AdapterKYCognexLib" is KAYA's AIK adaptor for Cognex.



If there are other unused AIK adaptors, but actual associated device is not connected, Cognex SDK might generate a warning/error. Some adaptors might generate error and prevent further connection to "AdapterKYCognexLib".
Therefore it might be needed to disable (rename/delete entry in registry map) them for proper operation.

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3.4 Step 4: (Optional) Setup Advanced Configurations

After previous installation steps are performed, the system is already configured to work with default parameters and configurations. Nevertheless there are some system configuration provided to adapt for custom use. These are described in section 4.

3.5 Step 5: Connect equipment and run application

KAYA's Vision Point SDK support variety of Frame Grabbers of different protocols and configurations, which can connect and control compatible cameras and devices.

The Frame Grabber card should be inserted into computer and compatible camera should be connected, in order to successfully run the example application with VisionPro.

After adaptor is loaded by VisionPro SDK, control over remote cameras and data stream will be available as Imaging Device Adapter video channel.

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4 Advanced configuration

4.1 Cognex AIK adaptor

KAYA's SDK implements the Cognex AIK (Acquisition Integration Kit) in order to provide CLV or Vision Pro users, fast and comprehensive control over KAYA's Frame Grabbers and remote cameras.

KAYA's adaptor, called "AdapterKYCognexLib", is located in registry key
[HKEY_LOCAL_MACHINE\SOFTWARE\Cognex\AIK\AdapterKYCognexLib]

The AIK adaptor provides some external configurations to setup the operation mode of the system.

4.1.1 Cognex AIK registry

1. "LibName"
   Type: REG_SZ
   Description: The full path name of the adapter .dll

2. "UseExe"
   Type: REG_DWORD
   Description: This controls whether the adapter is loaded into the user application's process (zero) or by aikserver.exe (non-zero). If not specified, aikserver.exe is used.

3. "ServerNameBase"
   Type: REG_SZ
   Description: This is a string which specifies the name base for named IPC objects when aikserver.exe is used.

4. "PoolSize"
   Type: REG_DWORD
   Description: Indicates how much memory should be reserved for images acquired by your adapter when aikserver.exe is used. Specify a value which is appropriate for your adapter. Default value: 1073741824 bytes per stream channel

5. "SkipDevicesDemo"
   Type: REG_DWORD
   Description: Specify if to skip demo devices exposed by KAYA's API. Physical devices are always enumerated unless skipped by "SkipDevicesWithPid"
   Possible values: 0 (false) / 1 (true)

6. "SkipDevicesWithPid"
   Type: REG_MULTI_SZ
   Description: List of devices with specified PID (product id) which will be skipped in device enumeration of Cognex AIK adaptor.
   Possible values: Hardware device ids e.g 0x100 0x300 …

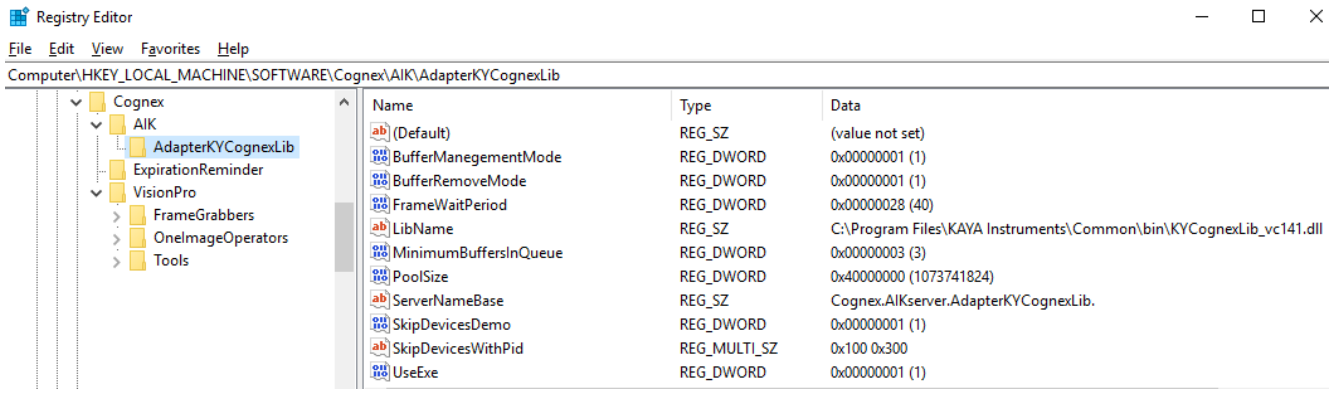
7. “GrabberSupportedFeatures”
   Type: REG_MULTI_SZ
   Description: List the supported Frame Grabber parameters by name. If this field is not present, then ALL available Frame Grabber parameters are exposed via AIK adaptor.
   *The supported parameters are subject to Frame Grabber type, firmware and software version.

8. “BufferManegementMode”
   Type: REG_DWORD
   Possible values:
   0 - Fill internal buffers up to available buffer queue size. Next buffer will be available only when VisionPro API pulls next buffer for processing.
   1 - Internal buffers are continually re-written and latest frame data will be available for VisionPro API to process.
   Default value: 1

9. “MinimumBuffersInQueue”
   Type: REG_DWORD
   Description: Minimum number of buffers that will be available for hardware to fill while acquisition is running. Other buffers may be already filled and waiting for extraction. This is only relevant if “BufferManegementMode” is 1.
   Default value: 3

10. “BufferRemoveMode”
    Type: REG_DWORD
    Possible values:
    0 – Off, buffers’ memory will be freed only when AIK adaptor is unloaded.
    1 – Buffers’ memory will be deleted when last image is extracted from AIK adaptor, and acquisition is already stopped.

11. “FrameWaitPeriod”
    Type: REG_DWORD
    Description: Period in milliseconds for timeout of AIK wait for integration operation for next available frame. If no frame has arrived in that timeout, VisionPro will be informed that integration operation has timed out
    Default value: 40 milliseconds



The above is an example of a registry configuration for KAYA’s adapter for Cognex AIK.