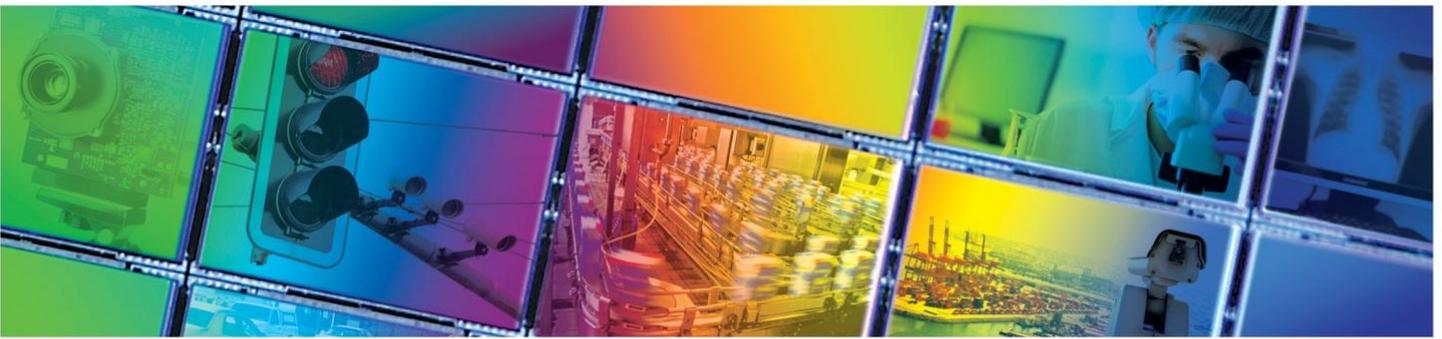




CHOOSING A FRAME GRABBER FOR EVALUATION BOARDS



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Introduction

Truesense Imaging currently provides two types of evaluation kits. The oldest kit, referred to as “gen1”, supports our full frame family of image sensors and some interlines. The newest kit, referred to as “gen2”, supports the TRUESENSE 5.5 μm and 7.4 μm pixel family of interline sensors. This gen2 system has an LCD display on the processor board and is designed to work with Truesense Imaging’s SensorStudio software. This application note addresses frame grabbers for both evaluation kits.

Gen 1 Frame grabber Selection

Truesense Imaging gen1 evaluation kits work with frame grabbers from both National Instruments and Bitflow. The right choice for a particular evaluation system depends on several factors.

BITFLOW

Bitflow supports operation of their frame grabbers on Windows NT, 2000, XP, Vista and W7 operating systems.

When purchasing a frame grabber from Bitflow, the SDK (Software Developers Kit), which includes the drivers for the board and software for image capture, should also be obtained.

The image capture software *CiView*, provided by Bitflow, allows the user to capture images and save them as bitmaps. CiView does not support any file format for saving an image with a bit depth greater than 8 bits. A 10 or 12 bit image can be written to a bitmap file, but only 8 bits of information per pixel will be saved.

The capture sequence application *Bitflow* application can be used to capture a sequence of frames. It does not run live view (a feature that is supported by *CiView*), but *BiFlow* does allow captured sequences to be saved as 10 or 12 bit RAW files.

Bitflow offers a selection of cables that connect Truesense Imaging’s evaluation boards to their frame grabbers.

For information about Bitflow’s products or for technical support related to Bitflow’s frame grabbers, visit www.bitflow.com.

NATIONAL INSTRUMENTS

National Instruments frame grabbers are supported on Windows NT, 2000, XP, Vista and W7 operating systems.

When purchasing a frame grabber from National Instruments, the drivers and image capture software are included automatically.

The image capture software provided by National Instruments, *Measurement and Automation Explorer*, allows the user to capture images and save them as PNG files. This file format saves the full bit depth of the image as a compressed file. The PNG compression algorithm is lossless.

SensorStudio can be used to capture images instead of National’s tool, but the frame grabber must be in the IMAQ family and you must create a camera file which SensorStudio can load. SensorStudio’s HELP facility provides information about the National IMAQ plugin and where to store the camera file.

National Instruments provides a cable that interfaces to all of Truesense Imaging’s KAI evaluation boards, and some of the KAF evaluation boards. For most KAF and all KLI evaluation boards, there is no commercially available cable for connecting to the National Instruments frame grabbers.

For information about National Instruments products or for technical support related to National Instruments frame grabbers, visit www.ni.com.

Whether ordering a frame grabber from either Bitflow or National Instruments, work with them to determine which model is best for you. This will depend on:

1. The speed of the evaluation board being used.
2. The bit depth of the images from the evaluation board.
3. Whether the evaluation board will run the sensor in single or dual output mode.
4. Whether the output of the evaluation board is LVDS or RS422.

Gen II frame grabber Selection

The gen2 evaluation kit is designed to work with SensorStudio and the AD9928A plugin which is loaded into SensorStudio. SensorStudio configures the gen2 evaluation kit's imager board by using a Python script. The Python script sends commands to the gen2 processor board using CameraLink serial or USB. Because each frame grabber vendor provides an SDK for serial communications, only frame grabbers supported by SensorStudio can be used (but see the USB section below for information about using a generic Camera Link frame grabber).

USB

Using SensorStudio, it is possible to setup the gen2 imaging hardware and capture images using USB2.0. This provides the option of not purchasing a frame grabber at the expense of video display speed. When using USB2.0 the transfer rate is very limited due to USB2.0 specification.

The USB option also allows you to set up the imaging hardware and use non-supported frame grabbers and software. You can run the setup scripts with USB and this will start the direction of image data out the CameraLink ports.

When USB is used for capture only single channel mode is supported.

IMPERX FRAMELINK EXPRESS

The Imperx Framelink Express (part # VCE-CLEX01) is an Expresscard54 format card designed for use in laptops. This frame grabber can also be used in desktop computers with a PCI express to ExpressCard 54 adapter.

This frame grabber supports base/medium CameraLink and can be used for 1, 2 or 4 channel operation. Be sure that the latest Imperx firmware version is loaded in the frame grabber card (2.0.2 or newer).

Due to Imperx frame grabber hardware limitation, when 4 channels are selected, the pixel clock is dropped from 40 to 20 MHz. In 1 and 2 channel mode the pixel clock is 40 MHz.

The Framelink Express frame grabber uses two of the small CameraLink connectors referred to as SDR type connectors.

BITFLOW R64

The gen2 Evaluation kit and SensorStudio also supports NEON-CLB (base camera link, part number NEO-PCE-CLB) and KARBON-CLF (full camera link, part number KBN-PCE-CL2-F) frame grabbers.

The NEON-CLB uses PCIe4X and supports 2 channel mode at 85 MHz. The KARBON-CLF is PCIe8X and supports 4 channel mode at 85 MHz.

These frame grabbers can support full 4 channel Camera Link videos at 40MHz clock, versus Imperx Frame Link Express that are limited to 20MHz at full 4 channel mode. NEON-CLB and KARBON-CLF use large Camera Link connectors referred to as MDR.

Revision Changes

MTD/PS-0241

Revision Number	Notes
4.0	Updated for generation 2 evaluation systems.

PS-0053

Revision Number	Description of Changes
1.0	<ul style="list-style-type: none">Initial release with new document number, updated branding and document template.