Developer Guide

Phantom SDK for LabVIEW

Version 13.4.788.0 (September 2019)

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1.   Introduction

The LabVIEW SDK is designed to be used by LabVIEW developers who want to write their own code to control Phantom high speed cameras or to play, analyze and do measurements on cine files.

It contains visual instrument (VI) files needed to call Phantom SDK functions from LabVIEW, various utilities, and demo applications. This SDK uses the LabVIEW interface to shared libraries to call functions from Phantom libraries.

The LabVIEW SDK will operate in either 32 bit or 64 bit versions of Windows. The only component that is different is the associated Phantom DLLs. The LabVIEW SDK was written and tested in LabVIEW 2017.

This document provides a description of what you will find in the package and setup instructions.

2.   Package content

The package for LabVIEW SDK contains the following items:
- LabVIEW Phantom SDK
- LabVIEW demo applications
    - ✓ A simple application to connect, record, trigger, playback and save a cine. It also shows how to get and set common camera settings and information along with a simple analysis of the frames in a cine.
    - ✓ A simple application to show how to programmatically save a cine not using the standard save dialog box.

- LabVIEW Phantom SDK Help document
- Phantom SDK Reference Manual
- The Phantom DLLs for the 788 release.

3. Installation

Do the following steps prior to the use of this SDK.

- The distribution uses JKI's VI Package Manager 2018 (VIPM) to install the SDK for LabVIEW 2013+. You can download the free client from the following link:
  - **https://vipm.jki.net/download**
  - Note: You must install VIPM 2018, as any earlier versions of VIPM are not compatible with the package file provided.
- Run the latest *.vip file using VIPM and follow the instructions to install the SDK, documentation and examples for the selected LabVIEW version.

4. SDK description

4.1. LabVIEW Function VIs for Phantom SDK

The included LabVIEW function VIs make use of LabVIEW's interface for shared libraries, the "Call Library Function Node" to call Phantom SDK functions. You can find information on these functions in the "Phantom SDK Reference Manual.pdf".

The included function VIs are organized in two dimensions. First, they are categorized as either "Configuration", "Action/Status", "Data", or "Utility". They are further organized by which Phantom DLL they call: PhCon, PhFile, or PhInt. Refer to "Vision Research Phantom Series VI Tree.vi" for a useful diagram of all function VIs included in the SDK.

If you would like to create your own function VIs, templates for calling PhCon, PhFile, or PhInt functions can be found in the "_Templates" folder.

4.2. Phantom SDK Initialize & Close VIs

The 'Vision Research Phantom Series Initialize.vi' and 'Vision Research Phantom Series Close.vi' VI's are required for all applications.

4.3. LabVIEW Demo Applications

A set of LabVIEW demo applications for the Phantom SDK can be found in the <LabVIEW>\examples\Vision Research Phantom Series LabVIEW Driver. They are also searchable in LabVIEW's Example Finder under 'Instruments'.

4.3.1. Simple Video Analyzer

The Simple Video Analyzer is a great starting point for an application that is looking to set up a camera, record and trigger a cine, then download and analyze each frame of that cine. It is written in a queue based, producer-consumer architecture and is intended to be a good starting point for a beginner with interfacing with a Phantom camera.

If you'd like to use this as a template for your next Phantom camera application, navigate to File->Save As-> Copy.

4.3.2. Automated Save

The Automated Save example shows how to programmatically save a cine from a camera without using the standard save dialog box.

4.3.3. Previously Released Examples

Also included are the original examples from previous releases of the Phantom LabVIEW SDK, for your convenience. These are located at <LabVIEW>\instr.lib\ Vision Research Phantom Series LabVIEW Driver\Application Examples

4.3.3.1.   PhDemoLV.vi

PhDemoLV.vi contains a front panel (user interface) with the basic controls you need to get images from a camera, to set and get acquisition parameters and image parameters, to record and save cines to files and to playback the recordings either from camera or from file

4.3.3.2.   Play Cine from File.vi

Play Cine from File.vi contains a front panel (user interface) with the basic controls you need to read and display images from a Cine file.

4.3.3.3.   Play Cine from RAM.vi

Play Cine from RAM.vi contains a front panel (user interface) with the basic controls you need to read and display images from a camera's Frame Buffer Memory.

4.3.3.4.   Play Preview.vi

Play Preview.vi contains a front panel (user interface) with the basic controls you need to read and display preview images from a camera.

4.3.3.5.   Save Cine from RAM.vi

Save Cine from RAM.vi contains a front panel (user interface) with the basic controls you need to save images from a camera's Frame Buffer Memory to a Cine file.