Technical Note

Connect SDK vs. Direct SDK

Two Software Development Kits (SDKs) are available: **Connect SDK** and **Direct SDK**

General information can also be found under https://www.optris.global/optris-pi-sdks and on the provided PIX Connect software CD.

- The **Connect SDK** provides a large range of functions. The PIX Connect software has to run in the background. Through the Interprocess Communication (IPC) **colors**, **temperatures** or **ADU values** can be embedded into other applications via the Dynamic Link Library (DLL).

  A documentation (**Connect SDK Description-xxxx-xx**) of the commands is provided under *...\Optris GmbH\PIX Connect\documentation\Manuals*.

  Samples are provided under *...\Optris GmbH\PIX Connect\Connect SDK* or in the software menu under *Help* and *Connect SDK*.

- The **Direct SDK** is supported by the company **Evocortex GmbH** and accesses the camera directly. Therefore PIX Connect software cannot run at the same time. The library "libirimager" provides a C/C++ interface for Linux and Windows.

  For more information see http://documentation.evocortex.com/libirimager2/html/index.html.

  The file **IRImagerDirect SDK** can be downloaded for free under http://www.evocortex.org/downloads-1/. This SDK includes samples of C#, MATLAB and LabVIEW.

Comparison of Connect SDK and Direct SDK

	Connect SDK	Direct SDK
Supported by	Optris GmbH	Evocortex GmbH
Supported platforms	Windows	Linux and Windows
PIX Connect Software running	Yes (can run in invisible mode)	No
Samples	C#, C++, VC++.net	C#, MATLAB, LabVIEW
Supported imagers	PI and Xi series	PI and Xi series
Integrated features	Large range of functions like in PIX Connect software	Limited functionality (e.g. cannot process/generate ravi files)
Contact	info@optris.global	direct-sdk@optris.global

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Main functions overview

Main functions of PIX Connect software	Connect SDK*	Direct SDK
Changing color palette	Via software	✓
Changing temperature unit °C/°F	Via software	-
Temperature range scaling of reference bar (</>, 1σ, 3σ, OPT)	Via software	✓
Changing display frame rate (Skipping, averaging, min, max)	Via software	✓ (skipping)
Saving / changing layouts	✓	-
Temperatures in digital displays (Measure area, internal temp, chip temp, reference temp, uncommitted value)	✓ (except T_{Ref}, uncommitted value)	-
Arranging of thermal image (Mirroring, rotation, zooming)	✓	-
Settings for Flag automatic	Via software	✓
Detector heating (Chip temperature mode)	✓	✓
Changing emissivity, transmissivity, ambient temperature	✓	✓
Changing optics	✓	-
Changing temperature range and extended temperature range settings	✓ ; Via software	✓
Changing video format (device framerate)	✓	✓
Supporting PIF (Process Interface for In-/Outputs) functions	Set PIF out, get PIF counts	✓ (except autonomous operation of Xi 80)
Snapshot (tiff) function	Only trigger	✓
Recording (ravi) function	Only Start, Stop, Playing	-
Creating measure areas (different shapes, maximum, minimum, mean value, distribution)	✓	-
Creating calculated areas (Difference, averaging, peak-/valley hold)	Via software	-
Excluding areas	Via software	-
Individual emissivity values of measure areas	Via software	-
Temperature profiles	Via software	-
Temperature time diagram	Via software	-
Histogram	Via software	-
Extended measuring colors	Via software	-
Image subtraction	Via software	-
Alarm settings	Only setting thresholds	-
3D display of thermal image	Via software	-
Event grabber	Via software	-
Supporting Xi camera (motorized focus, Ethernet, autonomous operation)	✓	focus ✓ ; -
Supporting visual camera of PI 2xx	✓	✓
Linescanning function	Via software	-
Merging function	Via software	-
Working with more than one imager/instance	✓	✓
Request of hardware revision, firmware revision, serial number, PIF serial number, PIF/VID	✓	✓ ; ✓ ; ✓ ; - ; -
Request of internal data (T_{Flag}, T_{Int}, T_{Chip})	✓	✓
Flag operation	✓	✓

* Some functions cannot be configured in Connect SDK because they are integrated in PIX Connect software and can be adjusted there.

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Using samples of Connect SDK

To use the sample programs of the Connect SDK, the PIX Connect software has to run and the following settings have to be made. First of all connect the imager via USB to the PC. Start the software, go to the menu **Tools** and **Configurations**, choose **External Communication** and activate **Connect SDK (IPC)**.

Note: The samples can be found under the software menu **Help** and **Connect SDK**.
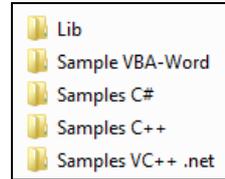
Figure 1: Samples for Connect SDK from Optris
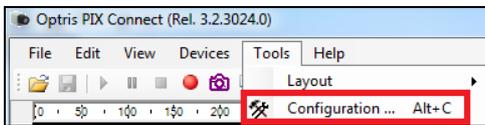
Figure 2: Menu Tools and Configuration
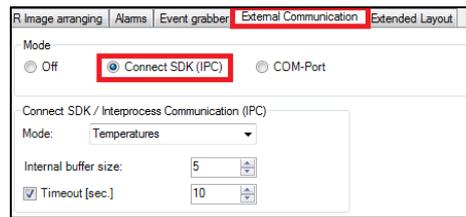
Figure 3: Configuration window External Communication

Now open a sample program by keeping the software running.
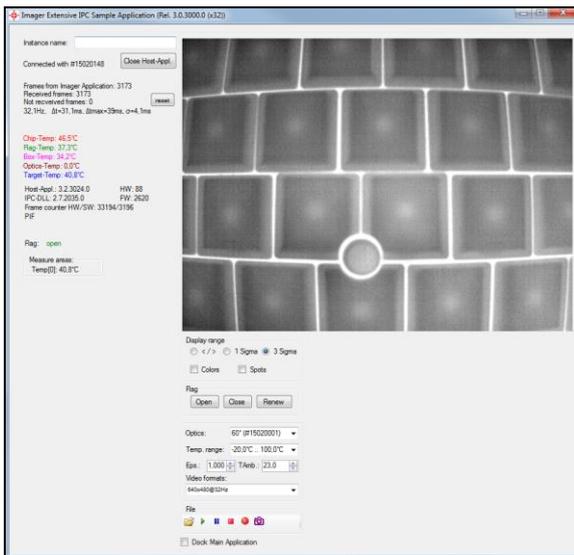
Figure 4: Sample program *Start IPC2 Extensive*
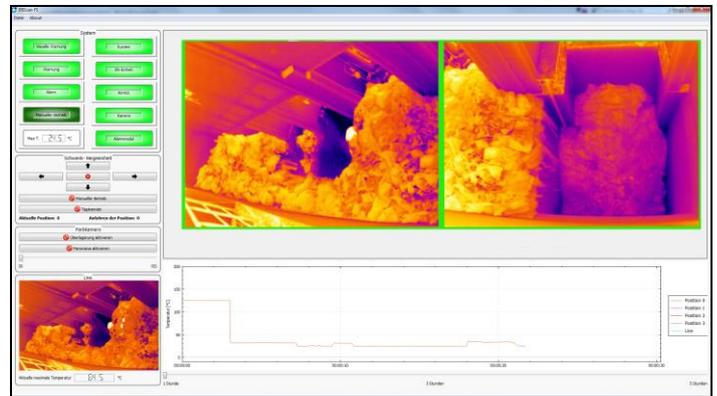
Figure 5: Example from IRIS GmbH using Connect SDK for a garbage bunker application

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Invisible mode of PIX Connect software for process background

If the PIX Connect software should not be seen on the PC while running, it can be started in an invisible mode.

PIX Connect software can be started with additional starting parameters using the command line. Please change the linkage in the software settings via the launch icon on the desktop. Behind the command line please add a space character and the required command parameter, e.g. "C:\Program\...\PIX Connect\Imager.exe" **/Invisible**
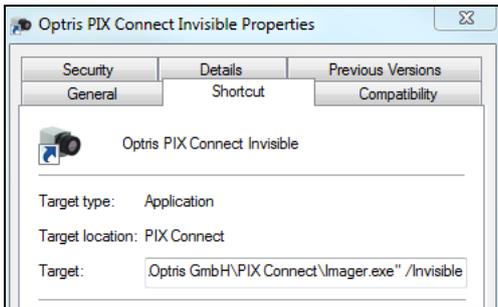
Figure 6: Command line of shortcut for invisible mode

Next to the invisible mode further parameters can be added for starting the software for example:

- Layout
- Name

To start the software with several parameters just add a space character and then the required command parameter, e.g.
 /Invisible /Layout=TestLayout /Name=Process

A full list of possible commands can be found in the manual of the PIX Connect software under chapter 2.7.

When starting the software via the newly created icon it is now only shown in the task manager under Processes (Imager.exe).
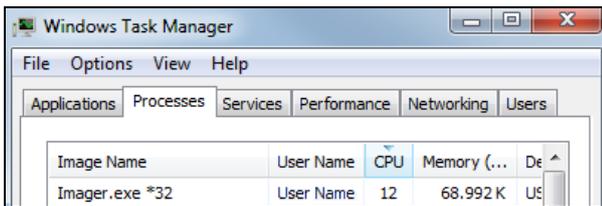
Figure 7: Task Manager shown Imager.exe of software

Using samples of Direct SDK

The freely downloadable IRImagerDirect SDK from Evocortex provides samples of C#, MATLAB and LabView. In order to use the samples of MATLAB and LabVIEW a license of the programs are needed. The samples are located in the file folder *irDirectSDK-x-x-x\examples*. Descriptions and video tutorials are included.

To use MATLAB and LabVIEW samples without having a license is also possible. They are provided under https://www.optris.global/optris-pi-sdks.

A sample which is just showing the IR image can be found on the PIX Connect software installation folder under: *SDK\Direct SDK\Direct SDK Sample\sample*


Figure 9: Samples for Direct SDK from Evocortex
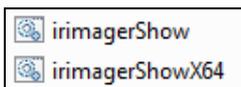
Figure 8: Sample of Direct SDK on PIX Connect software installation folder