Quark
LWIR Video Camera

Quick Start Guide

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1.0 Document

1.1 Revision History

Version	Date	Comments
100	10/14/2011	Initial Release

1.2 Scope

Quark ™ is a miniature infrared imaging core from FLIR Systems®. This Quick Start includes information required for first-time use of the Quark Camera.

The FLIR website will have the newest version of this document as well as offer access to many other supplemental resources: http://www.flir.com/cvs/cores/resources/

Here is a sample of some of the resources that can be found:

Document Title	Document Number	Description
Quark Quick Start Guide	102-PS241-01	Quick Start Guide for first-time use
FLIR Camera Controller GUI User's Guide	102-PS242-02	Detailed Descriptions for functions and adjustments for FLIR cameras using the FLIR Camera Controller GUI
Quark Product Specification	102-PS241-40	Product specification and feature description
Quark Electrical IDD	102-PS241-41	Written for Electrical Engineers to have all necessary information to interface to a Quark camera
Tau 2/Quark Software IDD	102-PS242-42	Written for Software Engineers to have all necessary information for serial control of Tau 2 and Quark
Assorted Mechanical Drawings and Models	Various	There are drawings and 3D models for various camera configurations for mechanical integration
Application Notes	Various	Written for Systems Engineers and general users of advanced features such as Gain Calibration, Supplemental FFC Calibration, NVFFC Calibration, Camera Link, On-Screen Symbology, AGC/DDE explanation, Camera Mounting, Spectral Response, Optical Interface for lens design, and others.

There is also a large amount of information in the Frequently Asked Questions (FAQ) section on the FLIR website: http://www.flir.com/cvs/cores/knowledgebase/. Additionally, a FLIR Applications Engineer can be contacted at 888.747.FLIR (888.747.3547).

2.0 Unpacking the Camera

When unpacking the camera, please heed customary electrostatic-discharge (ESD) sensitive device precautions including static-safe work station and proper grounding. The Quark camera is packaged in foam to prevent damage during shipping. It is also placed in a conductive anti-static bag to protect from electrostatic-discharge damage.

Disassembling the camera can cause permanent damage and will void the warranty. Operating the camera outside of the specified input voltage range or the specified operating temperature range can cause permanent damage. The camera back is not sealed. Avoid exposure to dust and moisture. This camera contains electrostatic-discharge-sensitive electronics and should be handled appropriately.

3.0 Basic Accessories

The Quark Camera can be simply used with the Quark VPC Module Accessory, which provides an easy way to evaluate the camera core and access analog video during development. You can find this and other accessories at http://www.flirshop.com.

3.1 Quark VPC Module Accessory

The Quark VPC module accessory includes USB-A to USB-mini B cable for power and communications, USB power supply, European power adapter, MCX-to-BNC cable for analog video, and mounting screws.
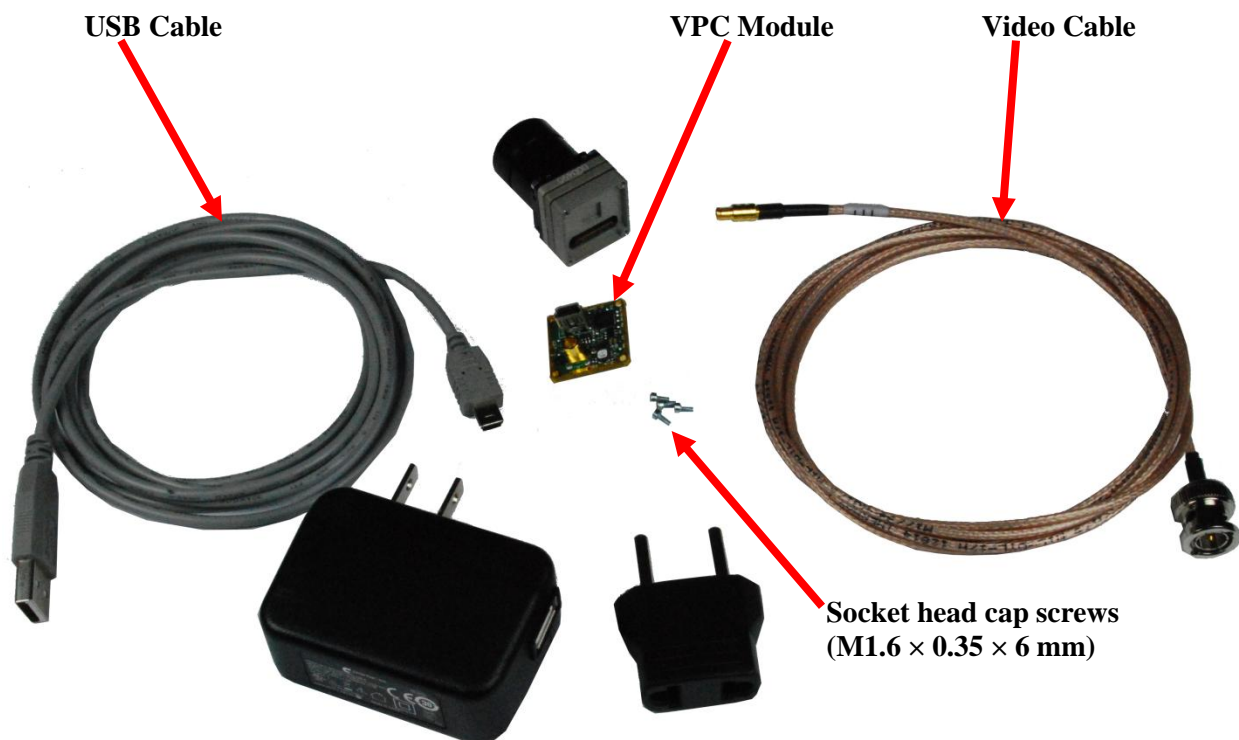
USB Cable **VPC Module** **Video Cable**

Socket head cap screws
(M1.6 $\times$ 0.35 $\times$ 6 mm)

Figure 1: Quark Camera and VPC Module Accessory Kit

4.0 Connecting to the Camera

This section describes installation of necessary software, physical camera connections, and software connection to the camera.

4.1 FLIR Camera Controller GUI

The FLIR Camera Controller GUI provides communication between a PC and a Quark camera using either the USB interface or some other means of serial communication.

1. If you have an older version of the FLIR Camera Controller GUI loaded on your PC, you should first uninstall it using the Windows Uninstall utility via the Windows Control Panel before proceeding with this installation.
2. The newest version of the FLIR Camera Controller GUI can be found at the following URL: http://www.flir.com/cvs/cores/resources/software/tau/
3. Click on the link to download the GUI and save it to your computer.
4. Extract the file using WinZip or other software. This can typically be done by right-clicking on the zip file and selecting "Extract".
5. Open the directory where you saved the file and double-click "setup.exe".
6. Walk through the installation steps.
7. When the primary installation is completed, you will be prompted to install Silicon Laboratories drivers. This portion of the installation is necessary for using a USB connection to the camera.
8. The program will install to **Start→All Programs→FLIR Systems→Camera Controller GUI**

4.2 Physical Connection

This section describes physical connections to the camera and assumes that you have the VPC Module.

1. Plug the accessory directly into the rear of the camera. There is a black 60-pin connector that will mate. Use the included socket head cap screws to secure the expansion board to the camera. These will insert on the four corners of the board.
2. Connect the analog video cable to the VPC on the back of the Quark Camera. There is an MCX mini coaxial connector on the back of the accessories. The opposite end of the cable has a standard coaxial connector. Connect this to the video input of an analog monitor. It may be necessary to use a BNC Female to Phono Plug (RCA) Adapter. These are readily available at electronics stores and allow the camera to be connected to the standard yellow video input on a monitor.

Figure 2: BNC to RCA Adapter

3. Connect the USB-mini B cable to the VPC Module and the USB-A end to your computer. (If you have sound enabled on your computer, you should hear a chime and see a notification that the device has been connected).
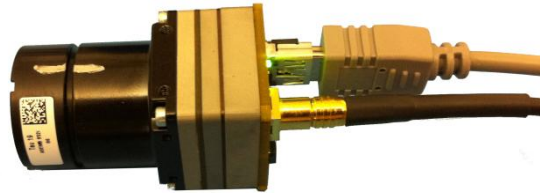
Figure 3: VPC Physical Connections

4. Analog video should appear within a few seconds after connecting the USB cable. Verify analog video is displayed on the monitor to ensure the camera is properly powered.
5. Additional Information: Access the Device Manager to verify proper driver installation and identify communications port. **Connection issues are most often caused by attempting to use the wrong COM Port to connect to the camera.**
   a. Right-Click on "My Computer" and select "Manage". This is typically either on the desktop or available through the start menu.
   b. Select "Device Manager" on the left Pane.
   c. Expand the tree for "Ports (COM & LPT)".
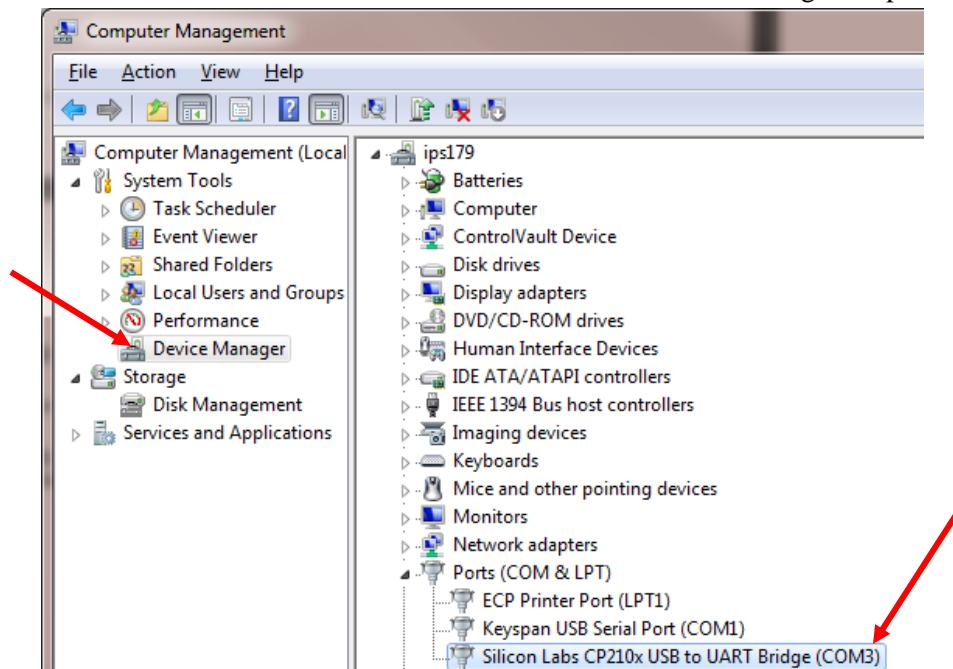   d. Note the COM Port number used for Silicon Labs. The following example shows COM3.

Figure 4: Device Manager showing proper driver installation

4.3 Software Connection

This section describes simple communication with the camera using the FLIR Camera Controller GUI and assumes that the camera is connected to the PC using a USB cable and either the VPC Module. Please refer to the FLIR Camera Controller GUI User's Guide for more details on functionality of the FLIR Camera Controller GUI and the Quark camera.

1. Run the FLIR Camera Controller GUI by clicking on the start menu and accessing **Start→All Programs→FLIR Systems→Camera Controller GUI.** (The software may take up to 30 seconds to load the first time.

2. When the GUI first opens, it will display "Not Connected" on the bottom left. The first step is to connect to the camera.
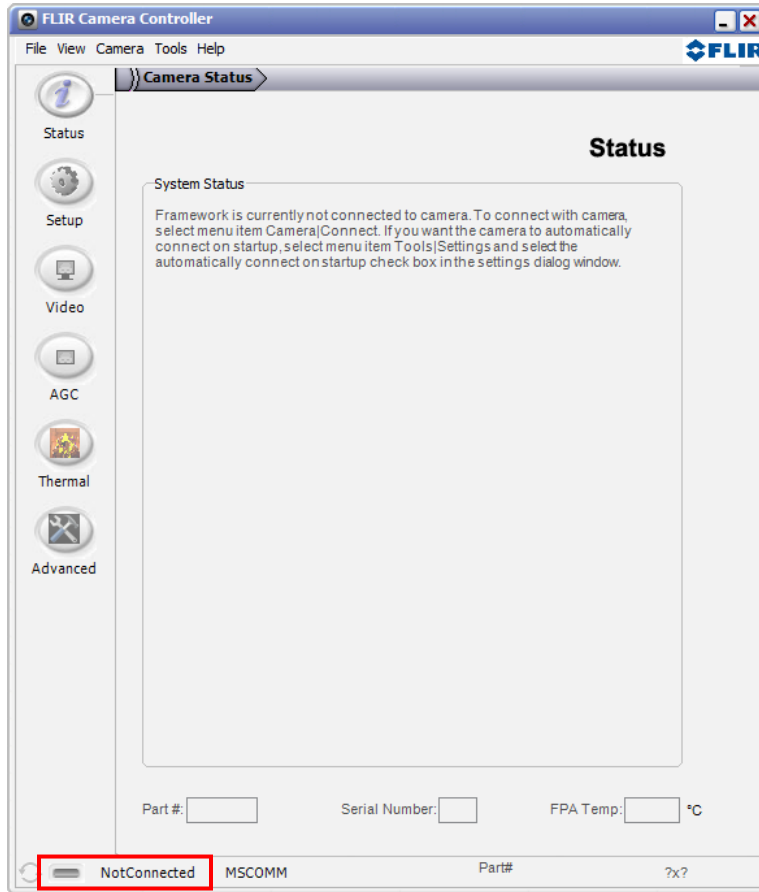

Figure 5: FLIR Camera Controller GUI Status Tab – Not Connected

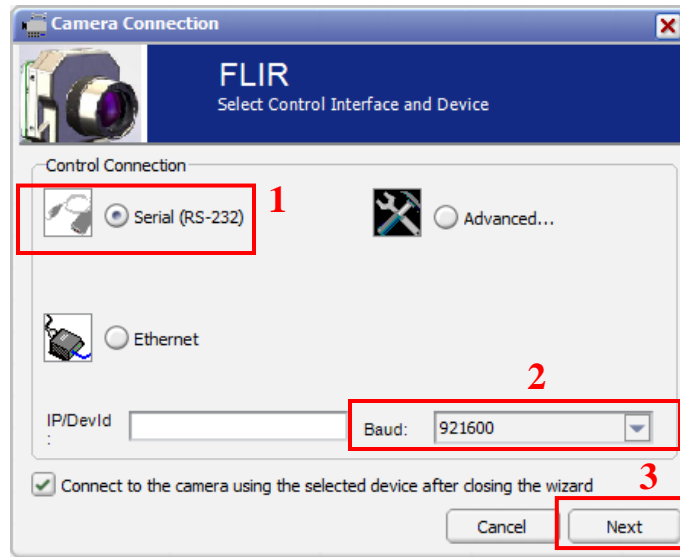3. Connect to the camera by selecting **Tools→ Connection**

Figure 6: FLIR Camera Controller GUI Connection Window Part 1

4. Select Serial (RS-232), select 921600 as the Baud Rate for fastest communication, and click Next. If you only have one serial communication port on your computer, the button will say Finish.
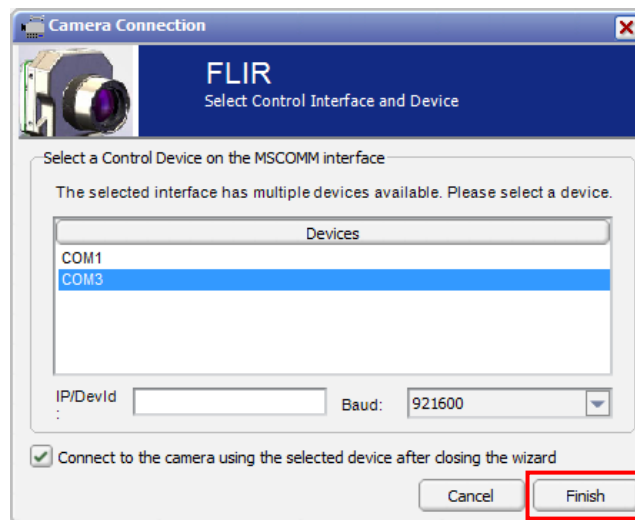

Figure 7: FLIR Camera Controller GUI Connection Window Part 2

5. Select the Com port seen in the Device Manager and click Finish.
6. The GUI will now automatically connect to the camera and refresh information in the software. The status LED will turn green and it will display "Connected" on the bottom left. It is also possible to retrieve the part number and serial number of your camera from this screen.
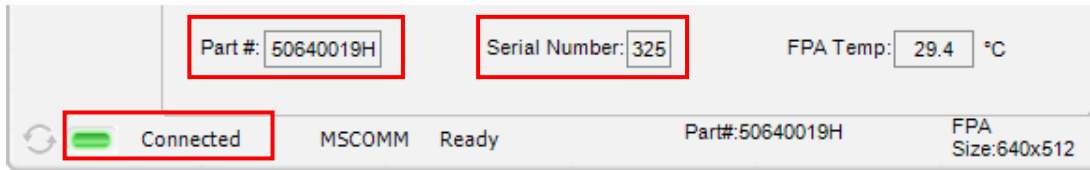
Figure 8: FLIR Camera Controller GUI Status Tab – Connected

4.4 Troubleshooting the FLIR Camera Controller GUI

If the FLIR Camera Controller GUI does not link with the camera, you may see the popup shown below which indicates that the GUI has not been able to communicate with the camera.
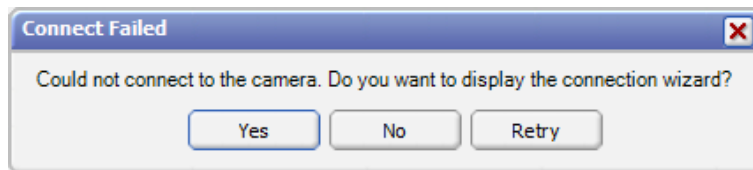

Figure 9: FLIR Camera Controller Error Message

If this is the case, verify the following:

- The USB Cable is properly connected to both the computer and the Accessory Module so that there is a green LED illuminated on the accessory.
- Verify that you selected the proper port if it was not detected automatically. Select Advanced, then Next in the Tools→Connection dialog box. Also, try disconnecting and then re-connecting the cable to the PC. If the GUI was launched before the cable was connected, close the GUI, connect the cable, and then re-launch the GUI.
- The Baud rate must be set in the Tools→Connection dialog box. The Quark camera supports Baud rates of 57600 and 921600. In the factory default configuration, the Quark camera automatically detects if the Baud Rate of the first incoming message is 57600 or 921600 and will communicate at that Baud Rate until reset.
- The Port may be occupied by another application. Shut down any other applications that may be using the port. Also, multiple instances of the FLIR Camera Controller GUI Program can be initiated using different ports so be sure the camera you are interested in controlling is actually connected to the physical port that was verified in the Device Manager in Section 3.2, step 5.
- Verify that the camera is powered by checking that the camera is producing an image on an analog monitor

If you cannot initiate serial communication with the camera after verifying these items, refer to the frequently asked questions (FAQ) at http://www.flir.com/cvs/cores/knowledgebase/. Additionally, a FLIR Applications Engineer can be contacted at 888.747.FLIR (888.747.3547).

This equipment must be disposed of as electronic waste.
Contact your nearest FLIR Commercial Systems, Inc. representative for instructions on how to return the product to FLIR for proper disposal.

FCC Notice. This device is a subassembly designed for incorporation into other products in order to provide an infrared camera function. It is not an end-product fit for consumer use. When incorporated into a host device, the end-product will generate, use, and radiate radio frequency energy that may cause radio interference. As such, the end-product incorporating this subassembly must be tested and approved under the rules of the Federal Communications Commission (FCC) before the end-product may be offered for sale or lease, advertised, imported, sold, or leased in the United States. The FCC regulations are designed to provide reasonable protection against interference to radio communications. See 47 C.F.R. §§ 2.803 and 15.1 et seq.

Industry Canada Notice. This device is a subassembly designed for incorporation into other products in order to provide an infrared camera function. It is not an end-product fit for consumer use. When incorporated into a host device, the end-product will generate, use, and radiate radio frequency energy that may cause radio interference. As such, the end-product incorporating this subassembly must be tested for compliance with the Interference-Causing Equipment Standard, Digital Apparatus, ICES-003, of Industry Canada before the product incorporating this device may be: manufactured or offered for sale or lease, imported, distributed, sold, or leased in Canada.

Avis d'Industrie Canada. Cet appareil est un sous-ensemble conçu pour être intégré à un autre produit afin de fournir une fonction de caméra infrarouge. Ce n'est pas un produit final destiné aux consommateurs. Une fois intégré à un dispositif hôte, le produit final va générer, utiliser et émettre de l'énergie radiofréquence qui pourrait provoquer de l'interférence radio. En tant que tel, le produit final intégrant ce sous-ensemble doit être testé pour en vérifier la conformité avec la Norme sur le matériel brouilleur pour les appareils numériques (NMB-003) d'Industrie Canada avant que le produit intégrant ce dispositif puisse être fabriqué, mis en vente ou en location, importé, distribué, vendu ou loué au Canada.

EU Notice. This device is a subassembly or component intended only for product evaluation, development or incorporation into other products in order to provide an infrared camera function. It is not a finished end-product fit for general consumer use. Persons handling this device must have appropriate electronics training and observe good engineering practice standards. As such, this product does not fall within the scope of the European Union (EU) directives regarding electromagnetic compatibility (EMC). Any end-product intended for general consumer use that incorporates this device must be tested in accordance and comply with all applicable EU EMC and other relevant directives.