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Guides and Resources: Basic IO - QDrone

Cameras

This document will summarize how to read data from the QDrone's RealSense RGB and Optical Flow cameras.

Reading from the Cameras

Note: Ensure that your QDrone is powered ON (charged battery plugged in) and that a connection has been established to it. Follow the steps under Charging Vehicle Batteries and Communicating with the QDrone in the Research Studio Setup Guide.

Note: Ensure that you have read and understood all the safety procedures and guidelines regarding charging Lithium Polymer batteries as well as guidelines on using the QDrone in a safe manner outlined in the Research Studio Setup Guide. If you have any concerns or questions, please contact Quanser technical support (tech@quanser.com).

Note: Safety eye glasses should always be worn, even outside the net.

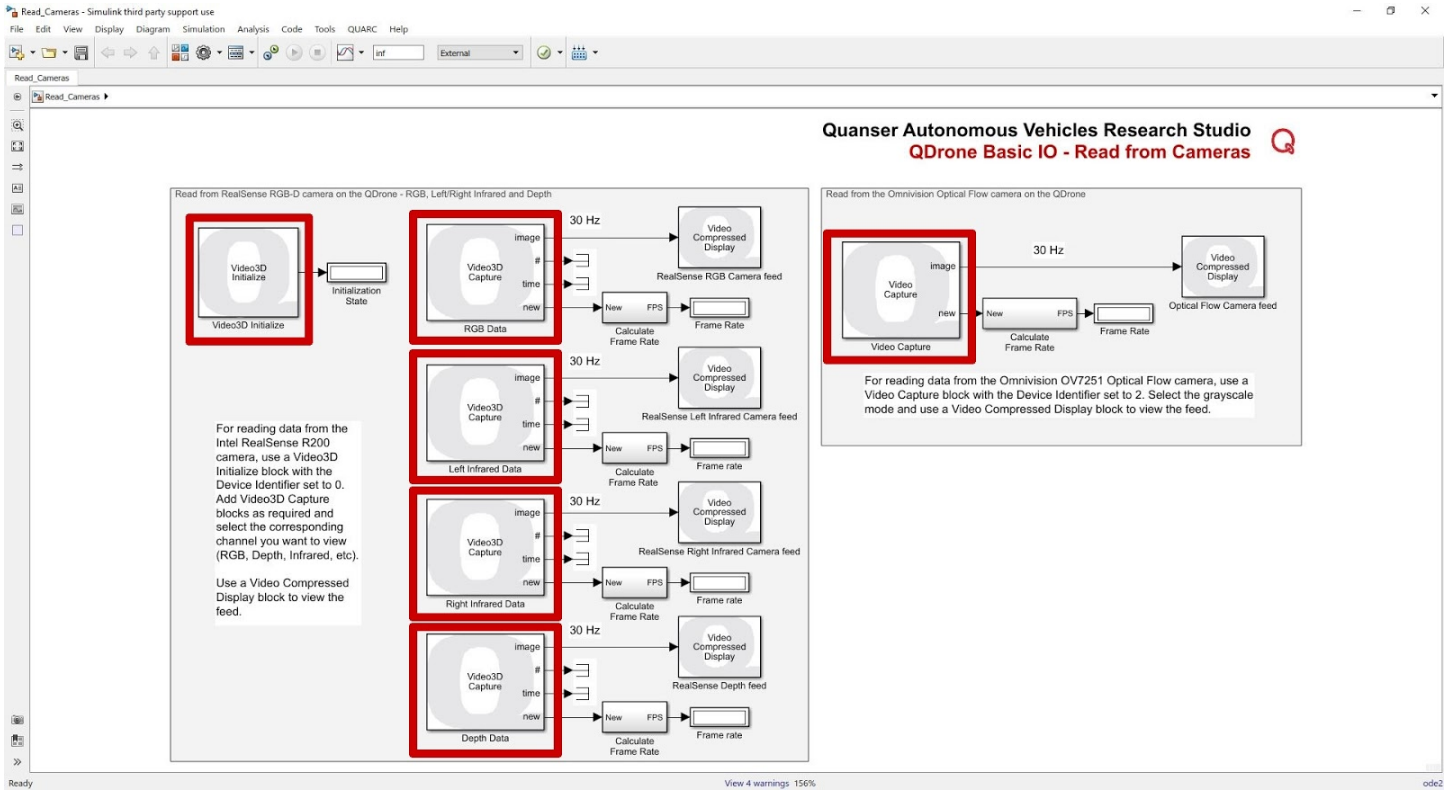


Figure 1: Read_Cameras.slx model, highlighting the Video 3D Initialize, Video 3D Capture, as well as the Video Capture blocks

1. Under the Guides and Resources > Basic IO > QDrone > Software folder, open Read_Cameras.slx (Figure 1)

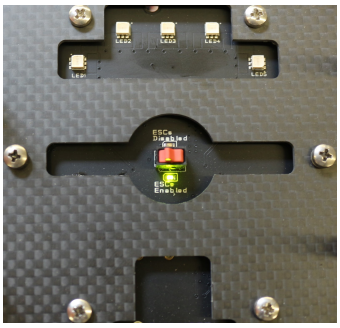
Note: For the latest documentation and controllers, please visit Autonomous Vehicles Research Studio Resources.

Autonomous Vehicles Research Studio Resources weblink:
https://www.quanser.com/products/autonomous-vehicles-research-studio/

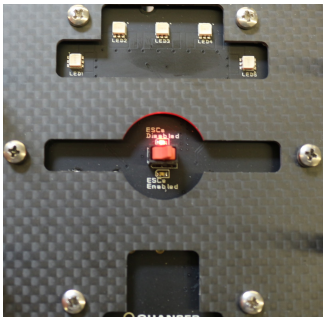
2. Under Model Configuration Settings, enter the correct QDrone hostname.

Note: See the QDrone IO Check section in the Research Studio Setup Guide for more information.

3. Ensure that the ESC disable switch is turned ON (that is, the ESCs are disabled) indicated by an active **red** LED next to the switch (Figure 2b). Place the QDrone inside the workspace.



a. ESCs Enabled (motors allowed to spin)



b. ESCs Disabled (motors not allowed to spin)

Figure 2: ESC Disable switch and its two positions

4. Build the model (QUARC menu > Build).
5. Start the model (QUARC menu > Start).
6. The QDrone will emit no sound, which signifies that the ESCs are disabled.
7. Ensure that safety glasses are worn. Enter the workspace and move the drone. The RealSense RGB Camera feed display should show the camera feed from the RealSense RGB camera (Figure 3a) on the QDrone. The RealSense Left/Right Infrared Camera feed display should show the camera feed from the RealSense Infrared cameras (Figure 3a) on the QDrone. The RealSense Depth feed display should show the depth information calculated from the Infrared feeds. The Optical Camera feed should display the camera feed from the downward facing optical flow camera (Figure 3b) on the QDrone. Sample camera feeds have been shown in Figure 4.

a. RealSense RGB Camera

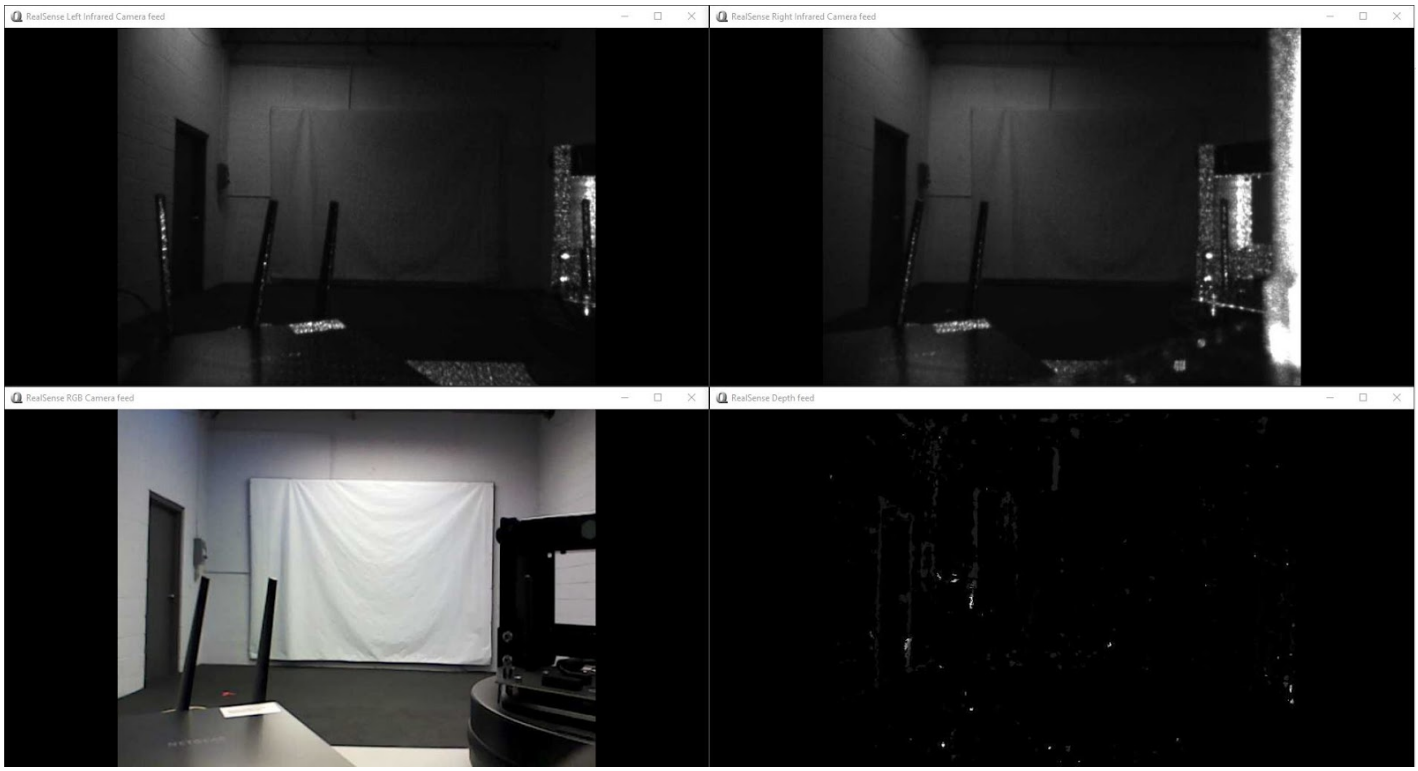
b. Optical Flow Camera

Figure 3: Cameras on the QDrone

Note: A device identifier must be specified in the Video Capture block for the optical flow (Figure 1). This identifier must be set to 2. See Guides and Resources > Concepts for more information.

8. Stop the model.

This completes a tutorial on how to capture images/videos from the QDrone. More information on configuring the Video3D Initialize, Video 3D Capture, Video Capture and Video Compressed Display blocks can be found under Guides and Resources > Concepts.



a. RealSense camera feeds (Infrared-Left (top left), Infrared-Right (top right), RGB (bottom left) and Depth (bottom right)

b. Optical Flow camera feed

Figure 4: QDrone Camera feed