

Basler Cameras



USING A WLAN FOR BASLER CAMERAS USED WITH BASLER'S PYLON APPLICATION NOTES

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1 Introduction

This document describes adjusting camera parameter settings for operating a Basler G-igabit Ethernet camera used with Basler pylon software in a wireless local area network (WLAN).

For information about installing the Basler pylon software and the camera, see the *Installation and Setup Guide for Cameras Used with Basler's Pylon API (AW000611xx000)*.

For information about operating the Basler camera, see the camera *User's Manual*.

2 WLAN Connection

2.1 Starting Assumptions

This document assumes the following:

- You have installed Basler pylon software on your system. Provided a "compatible" network adapter is installed, we recommend using the Basler performance driver owing to its robust packet resend mechanism. The Basler performance driver will also decrease the CPU load on the PC.
A "compatible" network adapter is an adapter of the Intel PRO 1000 series or an adapter that has one of the Intel chipsets used in a PRO series adapter.
For more information about Basler pylon software and how to install it see the Installation and Setup Guide for Cameras Used with Basler's Pylon API (AW000611xx000).
- You have configured the PC's network adapter for use with the WLAN network.



We recommend setting all elements of the network (network adapter, WLAN components, camera) to persistent IP addresses for quick device recognition.

- You have installed, powered up and configured the components (e.g. access points) of the WLAN network. The installation requires considering certain geometric requirements (e.g. maintaining lines of sight, preferably without obstructions and respecting maximum distances).
- You have installed, powered up and configured the camera following the "Hardware Installation" section in the Installation and Setup Guide for Cameras Used with Basler's Pylon API (AW000611xx000) and the camera User's Manual.

2.2 Initial Parameter Settings

Setting network related camera parameters to certain initial values as described below will permit operating the camera in a WLAN.

Given the limited bandwidth of a WLAN, bandwidth considerations are essential for establishing and maintaining a network connection between camera and PC. Overloading the WLAN causes loss of data packets (image data and configuration data) and eventually the disruption of the network connection.

For information about network related camera parameters and how to set them, see the camera User's Manual.



Before executing the first image acquisition, certain camera parameter settings must be adjusted to avoid overloading the WLAN. Using the camera's factory settings would overload the WLAN, as the camera is configured to operate at its maximum frame rate.

1. Open the Basler pylon Viewer.
2. Set the **Packet Size** parameter to 1500.
3. Select an 8-bit pixel data format, i.e. Mono 8 for a mono camera or Bayer XX 8 for a color camera (where XX indicates the color filter alignment; see the camera User's Manual).
4. Set the **Inter-Packet Delay** parameter (GevSCPD) to a very high value. This will decrease the **Device Current Throughput** parameter value (GevSCDCT).

The minimum required **Inter-Packet Delay** parameter value (and the maximum allowed **Device Current Throughput** parameter value) depends on the quality of the WLAN connection, where a higher quality will allow lower **Inter-Packet Delay** parameter values.

5. Operate the camera in a continuous frame acquisition mode.
6. If a stable WLAN connection is not obtained, return to step 4.

We recommend using the Basler pylon Viewer for adjusting network related camera parameters for use in a WLAN. You can, however, also read and set the camera parameter values from within your application software by using the pylon API. For more information, see the Basler pylon Programmer's Guide and API Reference that is included with the Basler pylon software. See also the camera User's Manual for code snippets.

2.3 Optimizing Parameter Settings

When a WLAN is established some parameter settings should be adjusted for most efficient use of the available bandwidth.

The following steps assume that you have set the **Inter-Packet Delay** parameter to a very high value, ensuring that the WLAN connection is stable.

To optimize the parameter settings:

1. Make sure the camera is operating in a continuous frame acquisition mode.
2. Go to the **Stream Parameters** node of the Basler pylon Viewer.
3. Find the **Failed Buffer Count** and **Failed Packet Count** parameters under the **Statistic** node.
The **Failed Buffer Count** parameter value indicates the number of incompletely transmitted frames.
The **Failed Packet Count** parameter value indicates the number of incompletely transmitted data packets.
4. Decrease the **Inter-Packet Delay** parameter to a value shortly before the **Failed Packet Count** parameter value starts increasing.
When decreasing the **Inter-Packet Delay** parameter value, make also sure that the **Failed Buffer Count** parameter will be zero or remain at a very low value.
5. Having reached the optimum **Inter-Packet Delay** parameter value, note the current **Device Current Throughput** parameter value. Noting the parameter value will help in finding the optimum **Inter-Packet Delay** parameter value again when the payload size has changed (see below).

The optimum parameter values are set, when no image data packets are lost and when occasional but few data packet resend requests occur.



The parameter settings made in this section will only be valid for the current payload size, i.e. for the current amount of data per image and for the current frame rate. The payload size depends e.g. on the size of the AOI used and on the pixel data format.

If the payload size has changed, you must adjust the **Inter-Packet Delay** parameter again until the **Device Current Throughput** parameter value noted in step 5. is reached again.

Revision History

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AW00089201000	3 Dec 2009	Draft version for review only.
AW00089202000	28 Jan 2011	Initial release.

