



## Writing software to interface with the Applied Logic Engineering USB-to-GoPro camera Adapter

### Overview

The ALE USB-to-GoPro Adapter can be used to control the power on and power off to the GoPro camera remotely from a PC, Mac, or Linux computer or any other source that can send serial data. By properly configuring the camera's settings for One Button mode, this system can automatically start and stop video recording or can automatically take snapshots under control of the computer.

### Driver Requirements for the adapter

When the adapter is initially plugged into a Windows Vista or Windows 7 PC, Windows automatically downloads the correct driver. If it does not automatically download, either the user doesn't have internet access when (required to access and download the driver), or the user may have blocked automatic driver downloads in the security settings of Windows (or a third party firewall). If this occurs, you can manually download the driver for Windows 7 here:

<http://www.ftdichip.com/FTDrivers.htm>. Run the installer and then plug the adapter in.

In addition, if you are using a different OS (Mac or Linux), you can download other optional drivers here: <http://www.ftdichip.com/FTDrivers.htm>. Run the installer and then plug the adapter in.

### Software Development

There are several functions required to develop code for the adapter.

#### *Determining COM port*

When the adapter is first plugged into the PC, the computer's operating system will assign a serial port (COM) number to the adapter. Your software will need to determine this port number for issuing the proper commands to the camera.

One way to do this is to determine all of the serial ports available in the computer, then open each port in sequence (with 9600 baud, 1 stop bit, 8 data bits, and no parity bit) and issue the following command:

```
ATID<cr>
```

where <cr> is a carriage return character. If this port is connected to the adapter, it will return the following:

```
ATID<cr><cr>ELM621 v1.1
```

If you monitor the serial port after issuing the command above and receive no response or something other than the string above, that serial port is not connected to the USB-to-GoPro adapter.

#### *Software Startup*

When your application starts, it should set the default state of the output to the camera. This can be accomplished by opening the serial port connected to the adapter (see above) and issuing the following commands:

```
ATO2<cr>
```

```
ATS2<cr>
```

The first command sets the adapter output pin to an “output” followed by turning the output to the GoPro camera to the “high” state (the default state). The GoPro camera recognizes a high-to-low transition for all subsequent commands.

#### *Power Camera On*

Once the correct serial port has been determined and the output has been set to the high “default” state, you are ready to send commands to the camera.

To turn the camera on, the output bit must be driven low, then held low for 1 second, then driven high again. This can be accomplished by sending the following commands to the serial port connected to the adapter:

```
ATC2<cr>
```

```
<wait one second>
```

```
ATS2<cr>
```

The “ATC2” command sets the output bit to a “low” state. This must be held low for a minimum of 1 second for the GoPro camera to recognize it as a “power on”. After 1 second, the output should be driven back to a “high” state with the “ATS2” command.

#### *Power Camera Off*

When the camera is powered on, it can be turned off from the computer by driving the output bit low, holding it low for 5 seconds, then driving the output bit high again. This can be accomplished with the following commands:

```
ATC2<cr>
```

```
<wait five seconds>
```

```
ATS2<cr>
```

The “ATC2” command sets the output bit to a “low” state. This must be held low for a minimum of 5 seconds for the GoPro camera to recognize it as a “power off”. After 5 seconds, the output should be driven back to a “high” state with the “ATS2” command.