QUICK START GUIDE
BLUEBIRD SDI ADAPTER

Introduction

This guide is designed to get you quickly up and running with the BlueBird SDI Adapter.

It should be read in conjunction with the datasheet and other documents available on Active Silicon's website, here (see BlueBird SDI Adapter - Downloads section):

www.activesilicon.com/products/harrier-sdi-adapter

The BlueBird SDI Adapter is available as a housed unit or OEM PCB.

Figure 1. Housed unit

Figure 2. OEM PCB unit

Basic Operation

A quick simple way to see the unit operating is to plug in an HDMI lead that is connected to a monitor capable of displaying 1080p60. Then plug a USB lead into either USB port to power the BlueBird SDI Adapter.

To verify that the status LEDS are working correctly, they will quickly flash green and red in sequence (1-4) as the unit powers up. Immediately after this, LED 1 and LED 2 will flash red to indicate the firmware version. LED 1 indicates the major version number and LED 2 indicates the minor version number, e.g. one flash on LED 1 and two flashes on LED 2 is version 1.2; two flashes on LED 1 and one flash on LED 2 is version 2.1.

Once the board has powered up you will see the motion video test pattern shown in Figure 3. below.

If you have purchased an OEM PCB unit, the power can also be supplied from connector J1 (5V).
The power LED near the DIP switches will light up when the unit is powered (see Figure 10).

Test Pattern

With no video input connected, a simple "bouncing ball" motion test pattern is displayed on the video outputs (see Figure 3).

To display a 1080p60 static test pattern, move DIP switch 1 to the ON position (see Figure 4).
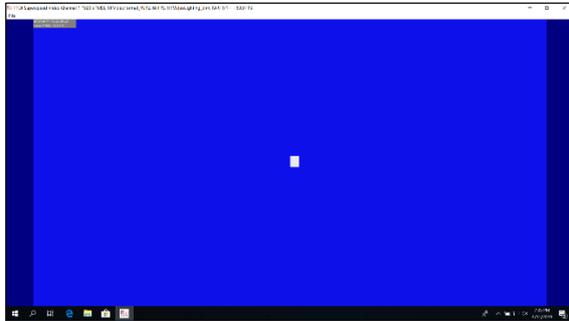

Figure 3. Motion Video Test Pattern

Figure 4. Static Test Pattern (DIP switch 1 ON)

Connecting SDI Input

When you connect a suitable HD/3G-SDI data source to the SDI IN connector (75 Ohm coax/BNC, e.g. 1080p60), or to the RJ-45 connector (100 Ohm twisted pair, e.g. 720p60), the BlueBird SDI Adapter will take a second or two to lock onto the signal and then it will provide simultaneous video outputs to devices connected to the SDI OUT (75 Ohm coax/BNC), HDMI OUT and USB VIDEO OUT connectors. These video outputs will have the same video format as the SDI input stream so any monitor connected to the SDI/HDMI outputs must be able to display the video mode being received at the SDI input.

SDI Output

Data is always provided on the SDI output in parallel with the HDMI and UVC (USB Video Class) outputs. The video outputs will have the same video format as the SDI input stream unless the Test Pattern is set ON. (See Test Pattern section above).

HD-VLC™ Compressed SDI Video Input & Output

HD-VLC compression allows HD/3G video to be sent using lower bitrate/frequency signals; this reduces the loss in the cable and enables the video to be sent over much longer cable lengths. The BlueBird SDI Adapter will automatically detect and decode a HD-VLC encoded input stream (i.e. HD/3G-SDI compressed into a SD-SDI bitrate stream). Use of 1080p60 or 720p60 mode is recommended (these compress down to 540Mbs and 270Mbps respectively).

Note: HD-VLC compression does not support all video modes, for more information please check the BlueBird SDI Adapter datasheet. Depending on the DIP switch settings the adapter can output a decoded 3G/HD-SDI stream or a HD-VLC encoded stream on the SDI Output BNC connector.
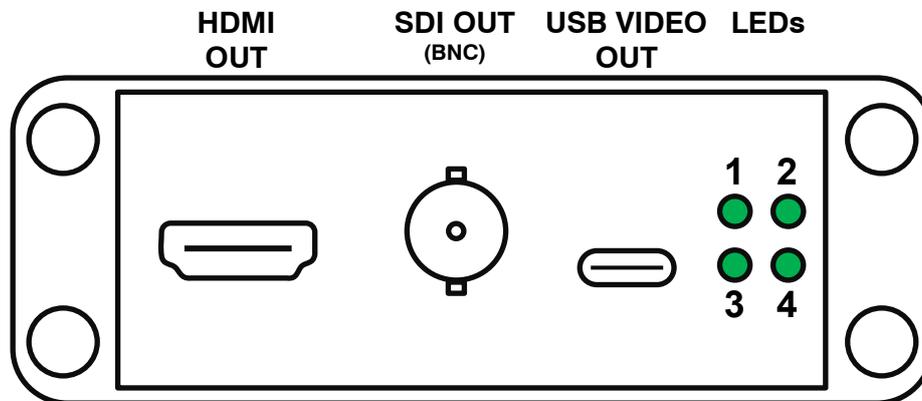
LED Functionality

Figure 5. Video output side of housed BlueBird SDI Adapter showing LEDs

If there is no video input, LEDs 1 and 2 will be off most of the time but will flash green alternately.

If there is video input, LED 1 (RJ-45) or LED 2 (BNC) will flash green (standard video) or yellow (HD-VLC mode). Note: if you switch mode it will take a second or two for the LED to change color.

LED 4 will flash green when the 1080p60 test pattern output is enabled.

If any LEDs are red there is a fault condition.

For more details on LEDs and status, please see the Basic Operation section and the BlueBird SDI Adapter datasheet on the Active Silicon website (in the BlueBird SDI Adapter - Downloads section).

USB Video

The SuperSpeed USB VIDEO OUT (type-C) port can be used to acquire/stream/record image data in parallel with the HDMI/SDI display output. The port provides a UVC (USB Video Class) compliant stream, and video data may be viewed on any UVC compliant host application such as the Harrier Example Application (part of the Harrier USB SDK - see below).

Note: this will only work with a cable of minimum specification:

USB 3.X Type-A/C to Type-C, 5Gbps (or greater)

Please ensure that you are using a suitable cable, otherwise the USB video will not work.

Installing the USB SDK

The Harrier USB SDK provides an example UVC video application with full source code and documentation for application software development. It is available for download in the downloads tab here:

https://www.activesilicon.com/products/harrier-sdi-adapter

Currently the SDK is only supported on Windows 10.

The installation of additional drivers is not required.

Running the Harrier Example Application

Once installed, the Harrier USB SDK and HarrierView UVC example application appear in the Windows Start Menu, under "Harrier USB SDK" (see Figure 6).
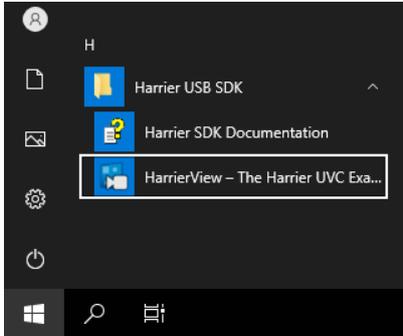

Figure 6. Harrier USB SDK installation in Windows 10 Start menu

After installing the SDK, plug the USB type C cable into the USB VIDEO OUT port and open the USB example application at:

C:\Users\Public\Documents\Active Silicon\Harrier USB SDK\bin\x64_Release\HarrierEx.exe

The application will automatically select a USB video device and display the video from this device in the application window. If you are using a laptop with a built-in camera, the application may select either the laptop camera or the BlueBird SDI Adapter as the initial video device. To see video from the BlueBird SDI Adapter you may need to change the selected video device/channel:

Figure 7. Selecting the USB C video output from the BlueBird SDI Adapter

Select: *File->Choose Device* and select the Harrier video channel as shown in Figure 7. The application will then prompt you to select one of a set of supported video modes (see Figure 8).
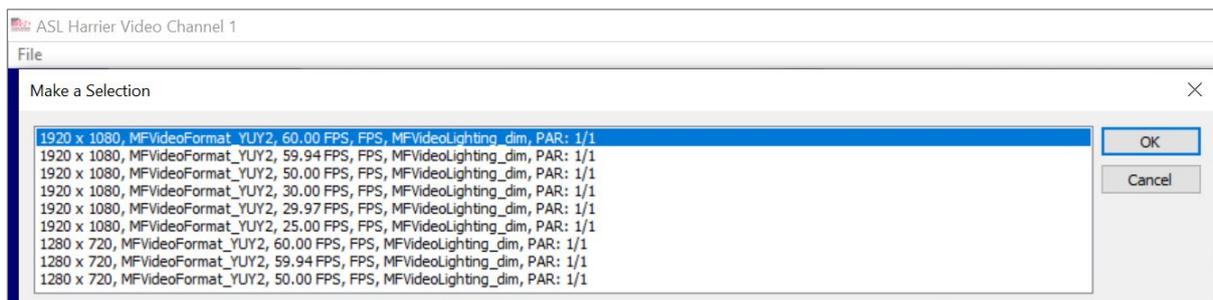

Figure 8. Selecting the correct video stream format from the Camera/ BlueBird SDI Adapter

Note: The Example Application <u>must</u> be set to the same video mode as that being received by the BlueBird SDI Adapter otherwise the application will not be able to capture the video. The BlueBird SDI Adapter outputs the same video mode that it is receiving so the format of the input mode can be determined by checking the format of the HDMI or SDI output of the SDI adapter.

Please ensure that your camera is set to 1920 x 1080 @ 60 FPS mode. Once the mode has been selected the Harrier Example Application should start capturing USB video from the BlueBird SDI Adapter/camera.

If it does not

Select: ***File->Acquisition Enable***

If this does not work, please check that the video input format matches the mode selected when choosing the Example Application video mode.

If the issue is still not resolved, enable the test pattern by setting DIP Switch 1: ON and re-select the Example Application video mode using a resolution of 1920 x 1080 @ 60 FPS
(see Figure 9).

If this does not work, but you are getting output from the other video connectors, please ensure that you have a USB-C cable of the correct specification (USB3.X Type-A/C to Type-C, minimum 5Gbps).

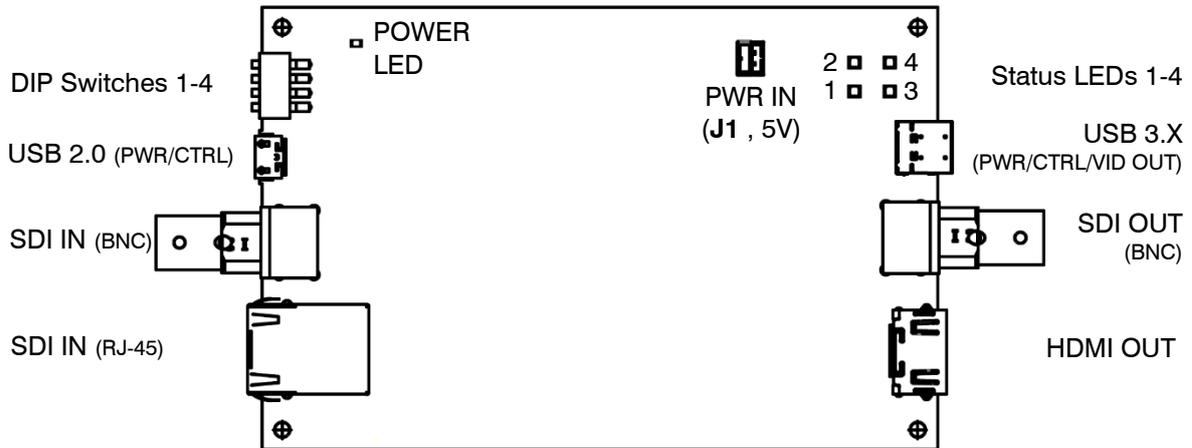**Figure 9. Harrier Example Application with test pattern enabled (1920 x 1080 @ 60 FPS)**

Figure 10. OEM PCB board connections

Note: The silk screen on issue 01 PCBs incorrectly labels the status LEDs. The numbering shown in Figure 10 is correct.