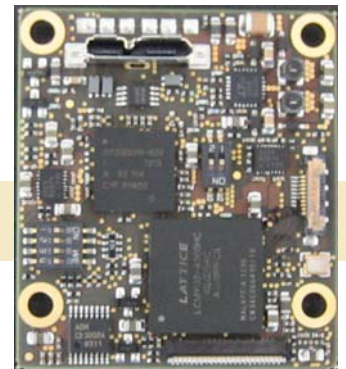


Thunder Link is a family of small form factor modules for formatting and converting generic digital video streams to standard compliant formats. Different interface standards are supported from the transmitter side including DVI/HDMI, VGA, 3G-SDI, HD-SDI, SDI, CVBS and USB. Supported physical media are copper and fiber cables.

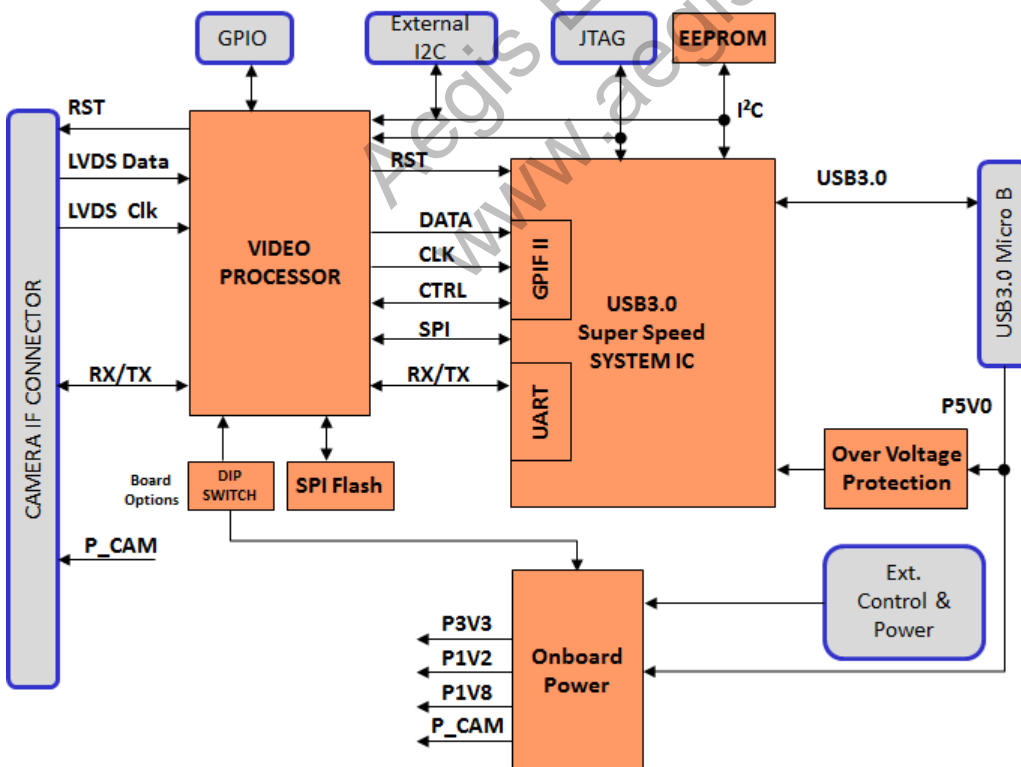
The modules connect to the digital video interface of Sony's FCB-H, FCB-EH and FCB-SE block cameras and support several progressive and interlace HDTV or SDTV formats. As no analog to digital conversion is done on these modules, excellent output image quality is guaranteed.

USB3.0-EH-H11 - Features

- + Provides a small size, easy to use HDTV USB 3.0 compliant video streaming capture solution
- + Up to 1080p30 uncompressed HDTV video data, 4:2:2 YUV format
- + The module receives digital video signals at the input and sends UVC (USB Video Class) compliant data packets containing digital video payload to a connected host computer
- + Operates always as Super Speed USB3.0 device (Host or OTG operation modes are not supported)
- + Host computer must run a UVC capable operating system (e.g. Microsoft Windows 7)
- + Parallel up- and downstream of camera control and status data is possible (USB CDC)
- + The input supports multiplexed LVDS based video data
- + LVDS data format provided by FCB-EH, FCB-SE and FCB-H11 camera blocks
- + Full USB bus powered camera solution possible*
- + Power supply voltage for camera is generated onboard



Block Diagram USB3.0-EH-H11



Supported Camera Blocks

Model	Comment
FCB-EH6500/6300	Progressive HD Video Standards
FCB-EH3410/3400	HD Video Standards
FCB-EH3310/3300	HD Video Standards
FCB-EH3150	HD Video Standards
FCB-SE600	Progressive HD Video Standards
FCB-H11	Progressive HD Video Standards

Supported Video Standards

The following HDTV video standards are supported by the USB3.0-EH-H11. Note that video standard availability is always dependent on the capability of the camera block used.

- + 1920x1080p @ 25Hz, 29.97Hz, 30 Hz
- + 1280x720p @ 50Hz, 59.94Hz, 60Hz, 25Hz, 29.97Hz, 30Hz

Note: Additional video standard and camera support is subject to future software updates.

Host (PC) - Device Communication

USB3.0-EH-H11 operates always as USB device which sends UVC compliant video data to a host PC. The host also communicates with the USB3.0-EH-H11 via a serial communication channel (USB UART).

Connecting the USB3.0-EH-H11 to the Host PC

Operating System Support

USB3.0-EH-H11 can be operated with all operating systems which fully support USB UVC type data and communication. First, Microsoft Windows 7 (32 and 64bit) operating system will be supported as reference. At a later point USB3.0-EH-H11 operation with other operating systems such as Linux might be qualified as well.

Driver Requirements

Full UVC compliant driver is required. Such drivers are supplied with Microsoft Windows 7 <usbvideo.sys> and also Linux operating systems. Manual driver installation is not necessary. For the USB UART feature, the <usbser.sys> class driver is used. Aegis provides a suitable driver assignment file.

Video Application on Host PC

Video display and recording can be done with standard application programs like VLC player, Mplayer or similar. VLC and Mplayer are open source based applications and can be free downloaded. If users want to design their own applications software, they are free to do so. All software programming tasks are OS based and have to be built upon UVC drivers. For further information please refer to Microsoft Windows API or Linux API information.

Controlling USB3.0-EH-H11 from the Host PC via USB UART

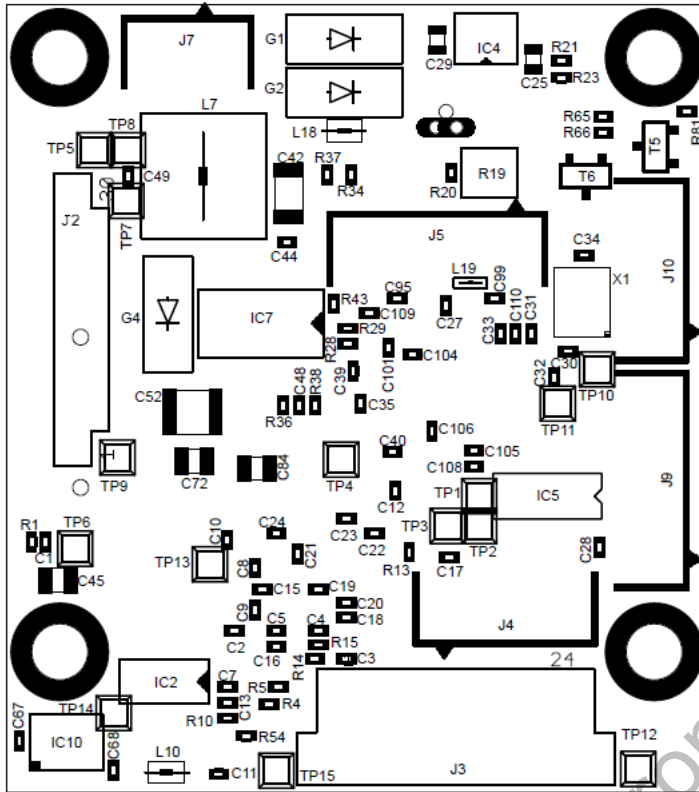
USB3.0-EH-H11 supports the USB UART functionality. USB3.0-EH-H11 is controllable via a virtual COM port. Any host software which uses COM ports can be used for controlling the USB3.0-EH-H11 and the connected camera block. The USB UART channel is transparent for any protocol. Communication speed is 9600bit/s or 38400bit/s maximum. Other COM port settings are (8N1).

Controlling USB3.0-EH-H11 from the Host PC via embedded UVC commands

UVC specifies a set of commands for controlling a USB video device, e.g. camera. These commands are sent to the video device via a UVC embedded protocol. Since these commands are not sufficient to control all features of Sony block cameras, the implementation of embedded UVC commands on USB3.0-EH-H11 is subject to future upgrades.

Preliminary Data Provided data is valid for B revision boards.

Board Connector Layout



PCB top side:

USB3 microB connector



FCB-H11 signal connector

PCB bottom side:



Camera Select Switch on PCB top side:

The dual slide Switch 1 must be used to setup the camera operating conditions.

SW 1-1:

OFF: Camera Power = 8V

ON: Camera Power = 5.6V (for FCB-SE600 only)

SW 1-2:

OFF: FCB-EH/FCB-SE600 mode

ON: FCB-H11 mode



Feature Select Switch on PCB top side:

The quad slide Switch 2 is used to setup special features.

SW 2-3:

OFF: Camera control over USB (USB UART, default)

ON: Camera control over RS232 UART (connector J9)



Switches 2-1, 2-2 and 2-4 must be kept in OFF position.

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J2: FCB-EH and FCB-SE600 signal connector

J3: FCB-H11 connector

J4, J5, J10: do not connect

J9: RS232 UART connector

J7: External power connector for FCB-EH/H11 (arrow marks pin 1):

Pins 1, 2: Input voltage 6V to 7V DC

Pins 4, 5: GND

Pin 3: System reset, pull to GND for reset

RS232 UART Connector J9

(arrow marks pin 1):

Pins 1 to 7: do not connect

Pin 8: GND

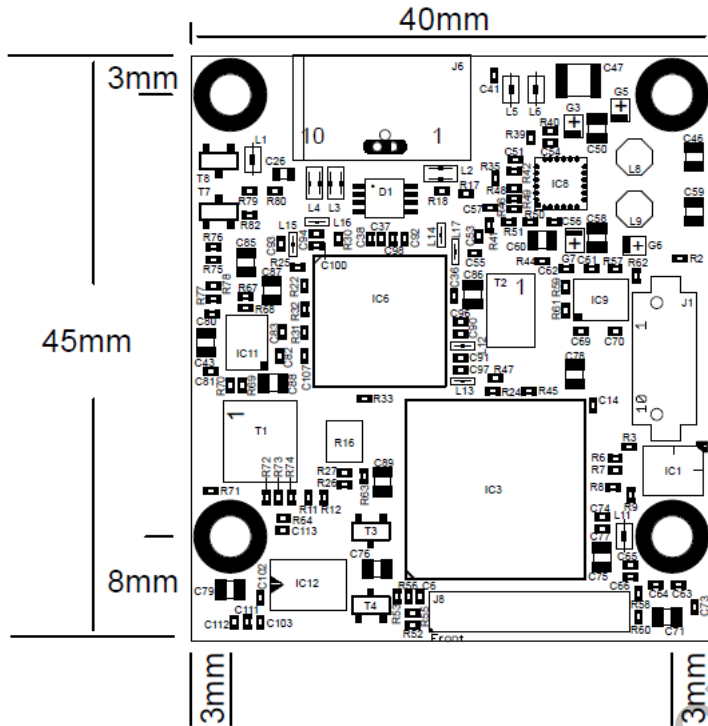
Pin 9: RXD (host to camera)

Pin 10: TXD (camera to host)

Note: External power mode is for FCB-H11 and FCB-EH series camera blocks only

Board Mechanical

Mounting Holes Drill=3.2mm, Land=5.6mm



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