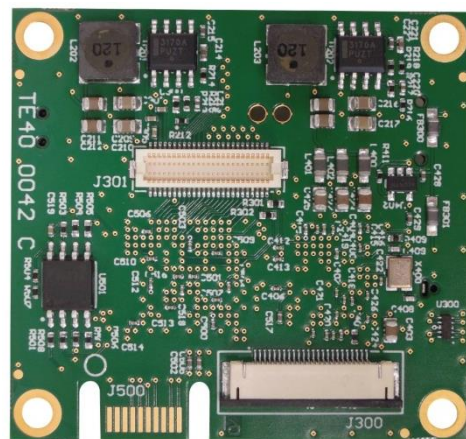
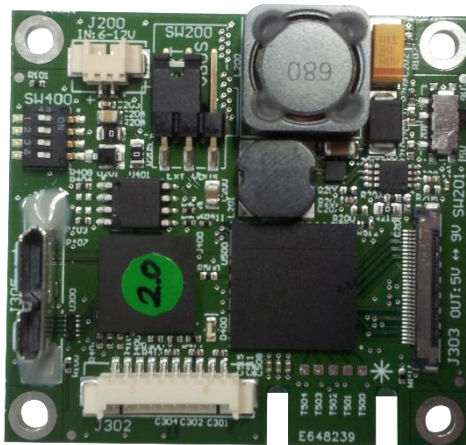


# SONY FCB EV, EH SERIES

## USB3 interface

### Technical Manual



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## 1 Presentation

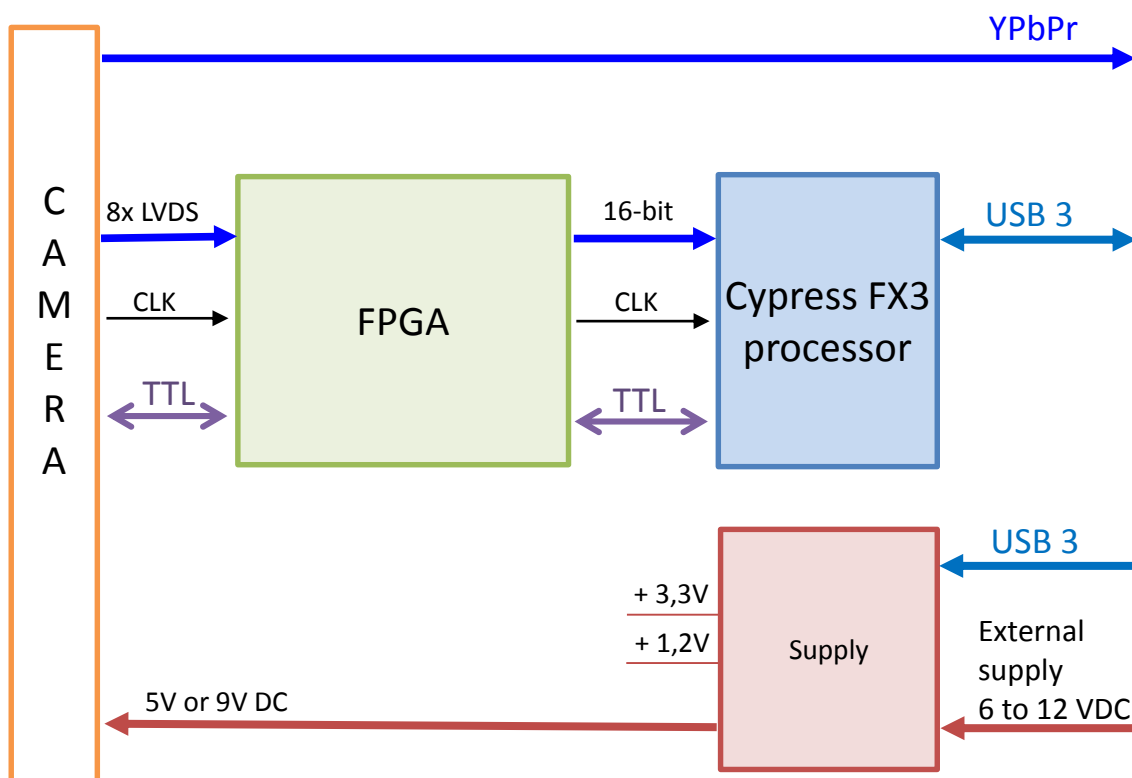
This system provides a USB3 interface to SONY FCB-HD cameras.

This interface automatically detects the model of camera (FCB EV 7XX FCB EH 6XX,...) and adapts the video processing consequently.

It also provides analog video outputs from the camera.

The camera control is done through the USB 3.0 link.

### 1.1 *Synoptic*



#### Main Functions:

- Receiving and decoding LVDS signal (FPGA)
- Formatting 16-bit (FPGA)
- Serialization and adaptation of the USB 3.0 standard
- Camera power (6 to 12V for EV/EH ), 5V for SE600 and the board voltages : 1.2V, 3.3V

## 1.2 Characteristics

### 1.2.1 HD Video Input

Connector	FCB-EV		FCB-EH		SE600
	USL 30	USL 30 + FFC 24	USL 30	USL 30 + FFC 24	USL 30
Signals	8 x LVDS pairs + Clock	8 x LVDS pairs + Clock	4 x LVDS pairs + clock	4 x LVDS pairs + Clock	4 x LVDS pairs + Clock
Type	Y, Cb/Cr 8 bit + HVF	Y, Cb/Cr 8 bit + HVF + Analog YPbPr	Y, Cb/Cr 8 bit + HVF	Y, Cb/Cr 8 bit + HVF + Analog YPbPr	Y, Cb/Cr 8 bit + HVF
Output formats	USB 3	USB 3 + Analog YPbPr	USB 3	USB 3 + Analog YPbPr	USB 3

### 1.2.2 USB 3 Drivers

#### 1.2.2.1 Video : UVC Class driver

The video format must be set in the camera using a SONY VISCA Function.

The supported video format are:

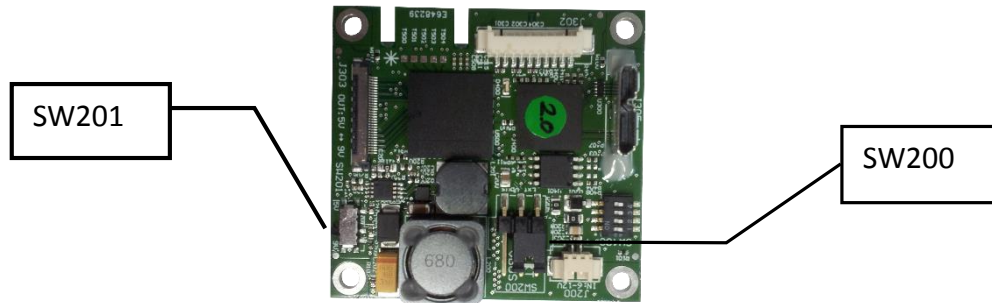
	EV7500 EV7300 EV7100	EV7130	EV5500 EV5300	EH6500 EH6300	EH3400 EH3300	EH3150	SE600
1080p30				✓			✓
1080p29.97	✓	✓					
1080p25	✓	✓		✓			✓
720p60				✓		✓	✓
720p59.94	✓	✓	✓		✓		
720p50	✓	✓	✓	✓	✓	✓	✓
720p30				✓		✓	✓
720p29.97	✓	✓	✓		✓		
720p25	✓	✓	✓	✓	✓	✓	✓
YPbPr	✓			✓	✓		

#### 1.2.2.2 Camera control : CDC Interface

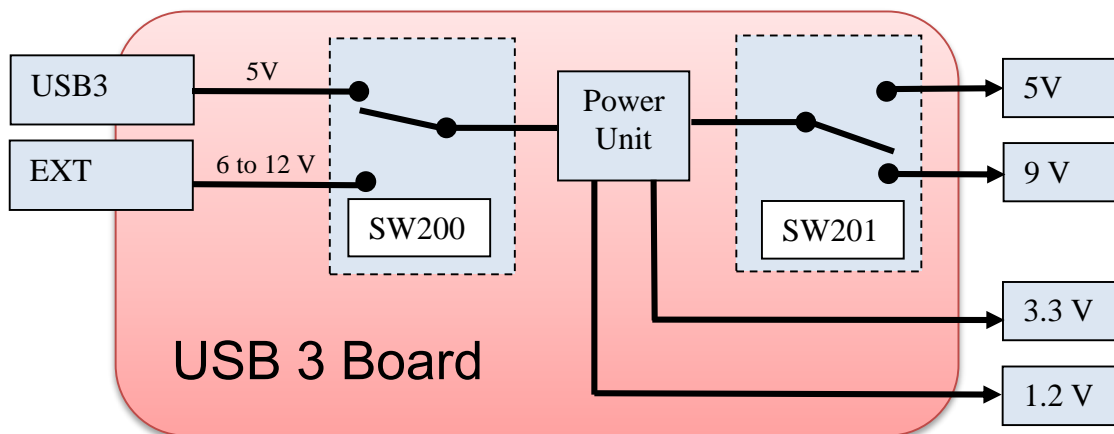
The driver installation is presented in the "TWIGAUSBCOM" driver installation procedure.

## 2 Connections



### 2.1 Camera Supply



The USB 3 interface board can be powered with the USB3 voltage or with an external supply.



Most of the SONY FCB camera must use an external power supply.

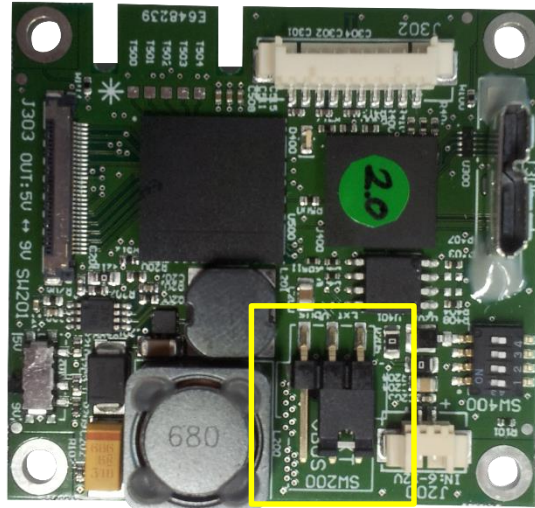
SONY Camera reference	SW200	SW201	USB3 cable
FCB EV7500 FCB EV7100 FCB EV5500 FCB EH6500 FCB EH6300 FCB EH3400 FCB EH3300 FCB EH4400 FCB EH3150	EXT ( <b>Factory setting</b> )  USB3	9V  <b>(Factory setting)</b>	  Standard USB 3 cable (about 1m)
FCB SE600	EXT  USB3	5V	  Standard USB 3 cable (about 1m)

## 2.2 Operating mode

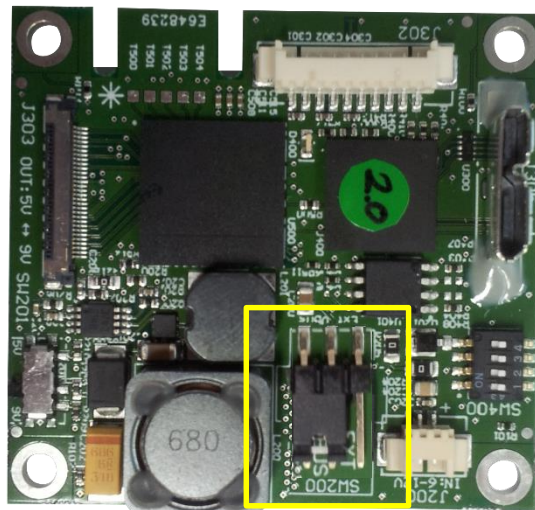
### 2.2.1 SW200

SW200 switches the power input: External or USB supply

a) SW200 on EXT



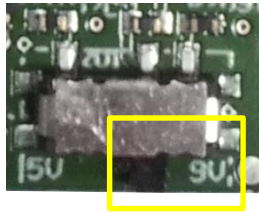
b) SW200 on USB



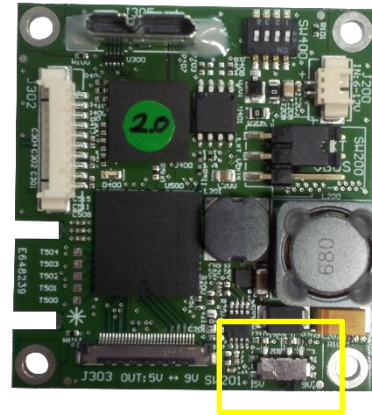
## 2.2.2 SW201

SW201 switches the power output: 9V or 5V

### a) 9V Output



### b) 5V Output



### Warning!

Be careful of the position of the switch SW201 before power on the system. If the switch is on the wrong position when powered on, **camera can be broken.**

## 2.3 With Sony FCB-EV and FCB-EH (without EH3150)

### LVDS Camera Connection



### FFC Camera Connection \*\*\*Optional for Analog YPbPr video output



5V  
USB 3.0

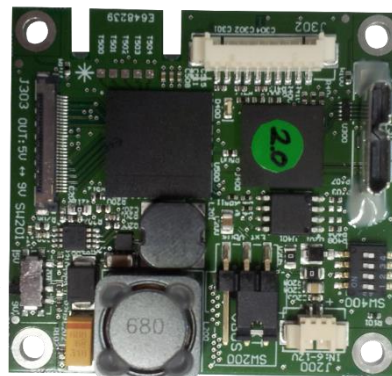
9V position

6 to 12 VDC  
External

### 2.3.1 Camera connexion

- LVSDS cable assembly : cable 30 ways KEL type SSL20-30SSB-xxx-B
- FFC cable : 24 ways 0.5mm

## 2.4 With Sony FCB-EH3150



5V  
USB 3.0

9V position

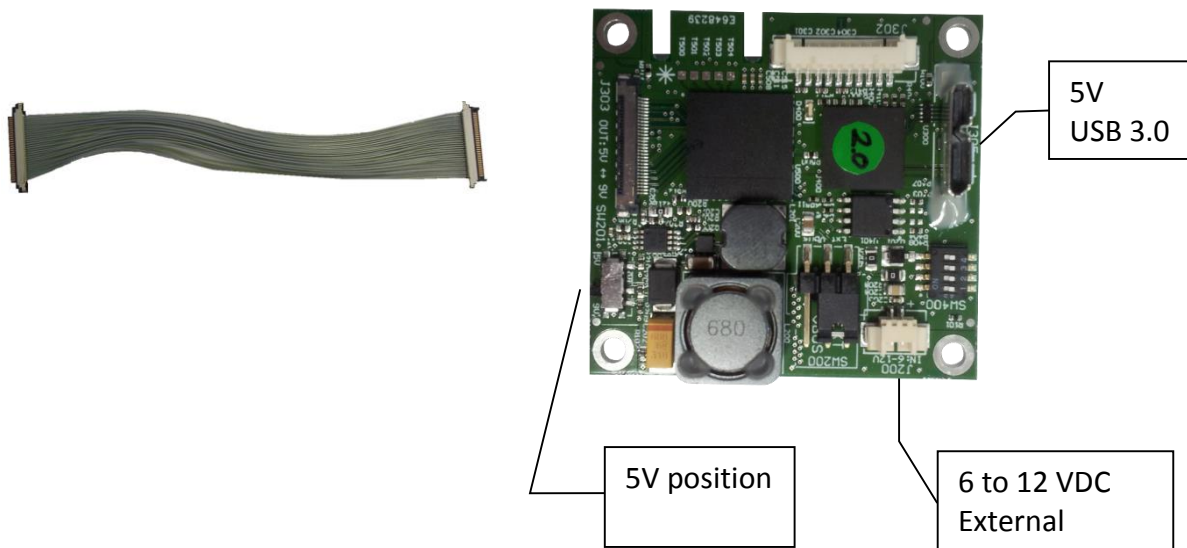
6 to 12 VDC  
External

### 2.4.1 Camera connexion

- LVSDS cable assembly : cable 30 ways KEL type SSL20-30SSB-xxx-B



## 2.5 With Sony FCB-SE600



### 2.5.1 Camera connexion

- LVSDS cable assembly : cable 30 ways KEL type SSL20-30SSB-xxx-B

## 2.6 Pin assignments

### 2.6.1 Power (J200)

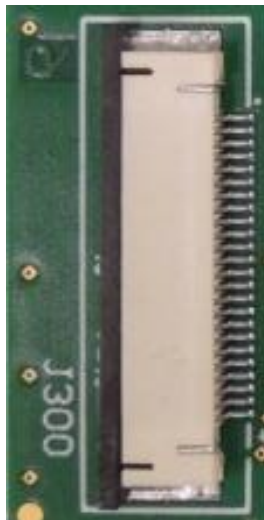
Connector MOLEX 53261-0271



0V	+V
1	2

### 2.6.2 FFC camera (J300)

ANTELEC ACF050V224CCMSB



1	NC
2	NC
3	NC
4	NC
5	NC
6	NC
7	NC
8	0V-GND
9	Pr
10	0V-GND
11	Pb
12	0V-GND
13	Y
14	0V-GND
15	NC
16	NC
17	NC
18	NC
19	NC
20	NC
21	NC
22	NC
23	NC
24	NC

### 2.6.3 LVDS Camera output (J303)

KEL USL00-30L

Cable assembly USL-20-30SS-005C



	EV	EH
30	TX4-	NC
29	TX4+	NC
28	TX5-	NC
27	TX5+	NC
26	Reset	Reset
25	NC	NC
24	TX6-	NC
23	TX6+	NC
22	TX7-	NC
21	TX7+	NC
20	0V-GND	0V-GND
19	0V-GND	0V-GND
18	+V	+V
17	+V	+V
16	+V	+V
15	+V	+V
14	+V	+V
13	RxD (TTL camera input)	RxD (TTL camera input)
12	TxD (TTL camera input)	TxD (TTL camera input)
11	0V-GND	0V-GND
10	TX0-	TX0-
9	TX0+	TX0+
8	TX1-	TX1-
7	TX1+	TX1+
6	TX2-	TX2-
5	TX2+	TX2+
4	TXCLKOUT-	TXCLKOUT-
3	TXCLKOUT+	TXCLKOUT+
2	TX3-	TX3-
1	TX3+	TX3+

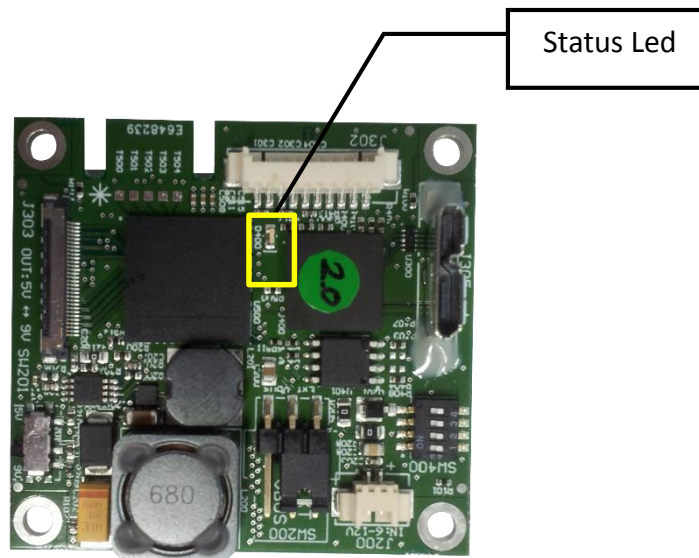
## 2.6.4 Analog Video output and communication (J302)

MOLEX 53261-1071

Y	Gnd	Pb	Gnd	Pr	Gnd	Gnd	+3V3	Boot	Gnd
1	2	3	4	5	6	7	8	9	10



### 3 Signalization and configuration



#### 3.1 Signalization LED

Periodically Flashing LED. Number of flashes indicates different board status:

- 1 flash every 5 seconds: Error
- 2 flashes every 5 seconds: Communication & Video error
- 3 flashes every 5 seconds: Format & Video error
- 4 flashes every 5 seconds: Video error
- 5 flashes every 5 seconds: Communication Error
- 6 flashes every 5 seconds: Configuration OK