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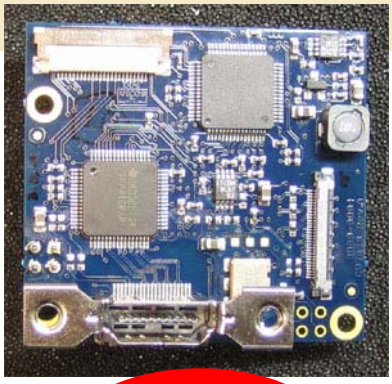
SDI-HDMI-H11-GM/SDI-H11-GM/ SDI-HDMI-EH-GM/SDI-EH-GM

Datasheet - HDMI/HD-SDI Output Video TransceiverT

This 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 fibre cables.

The modules connect to the digital video interface of Sony's FCB-H, FCB-EH and FCB-EX 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.

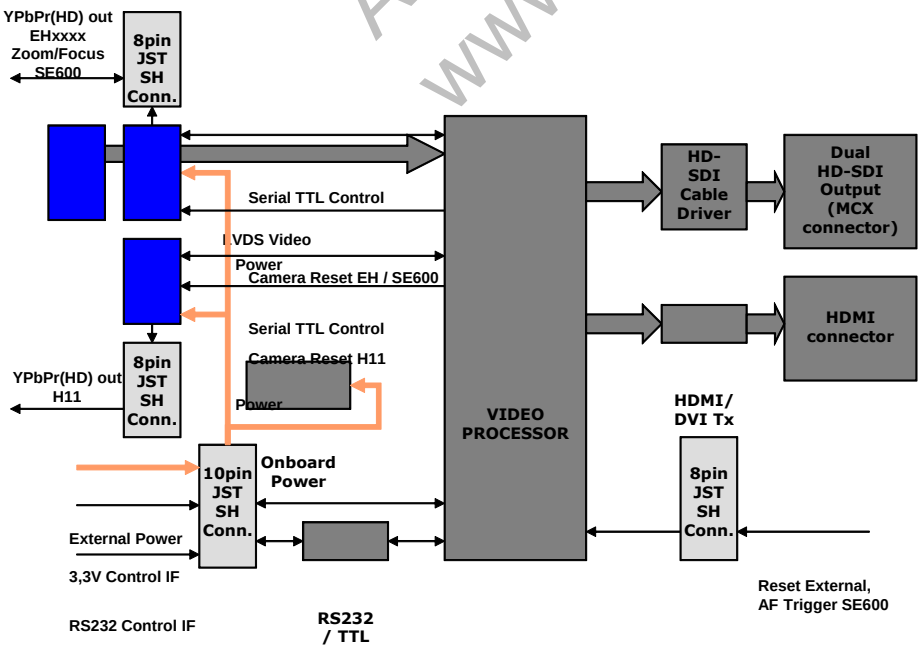
SDI-HDMI-H11-GM - Features



Dual HD-SDI plus HDMI Output

Supports various Sony HDTV camera blocks

+ Supports Sony FCB-EH6500/6300, FCB-EH3410/3400/3310/3300/3150
+ Supports Sony FCB-H11/H10
+ Supports new Sony FCB-SE600
+ Digital LVDS video input from camera
+ 1080i, 1080p and 720p output standard support
+ 25Hz, 29.97Hz, 30Hz, 50Hz, 59.94Hz and 60Hz frame rates
+ Automatic input standard detection
+ Dual HD-SDI output (SDI-HDMI-H11-GM, SDI-HD11-GM, SDI-HDMI-EH-GM & SDI-EH-GM)
+ HD-SDI outputs compliant to SMPTE292M / SMPTE274M / SMPTE296M
+ DVI video output over HDMI connector (SDI-HDMI-H11-GM, SDI-HD11-GM, SDI-HDMI-EH-GM & SDI-EH-GM)
+ Native digital signal processing chain for best image quality (no scaling)
+ Breakout of camera analog HDTV YPbPr and CVBS video
+ Serial control interface (RS232 or 3.3V TTL)
+ Supply voltage: 7V to 12V DC regulated (5V only when used with FCB-SE600)
+ Tiny module size 46mm x 42mm



Order Codes:

SDI-HDMI-H11
Dual HD-SDI output plus HDMI output
SDI-H11-GM
Dual HD-SDI output
SDI-HDMI-EH-GM
HDMI output

SDI-EH-GM
Cable Kit for FCB-H11 solution
SDI-EH-GM
CableKit for FCB-EH and SE600 solutions

This datasheet is valid for all E Revision Boards.
Preliminary Data

Specification Camera Interface

INPUTS:

DATA	LVDS digital video (from camera)
CLOCK	LVDS (from camera)
CONTROL Rx	3.3V TTL serial control interface
ANALOG	YPbPr and CVBS video 1Vpp into 75 ohms

OUTPUTS:

CONTROL Tx	3.3V TTL serial control interface
RESET	3.3V TTL, active low, for FCB-H11 only

The camera type is selected by onboard jumper setting.

Power and Environment

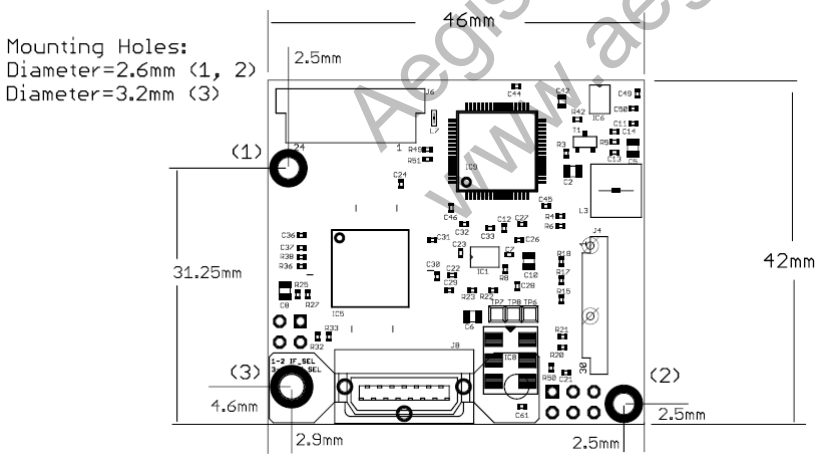
POWER INPUT:
7V TO 12V DC regulated, **5V DC regulated for FCB-SE600**
Power consumption (FCB-H11 + SDI-HDMI-H11-GM) 5.7 W (cam motors inactive)
Power consumption (FCB-EH6300 + SDI-HD11-GM) 5.9 W (cam motors inactive)
Power consumption (FCB-SE600 + SDI-HDMI-EH-GM) 3.9 W (cam motors inactive)
Power consumption SDI-EH-GM: 320mA @ 12V DC (max.)

Power consumption value conditions:
Power input 12V DC for FCB-EH and FCB-H11, 5V for FCB-SE600
Ambient temperature +25°C/77°F
Humidity 30%

OPERATING CONDITIONS:
Ambient temperature (min/max): -5°C/+60°C = 23°F/140°F
Humidity: 20%-80%

STORAGE CONDITIONS:
Temperature (min/max): -20°C/+60°C = -4°F/140°F

Board Mechanical



Maximum top component height = 10.5mm (HDMI connector)

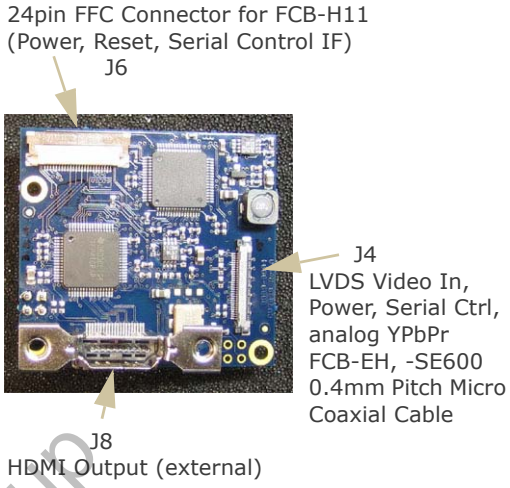
Maximum bottom component height = 6.8mm (MCX connectors)

PCB thickness = 1.56mm

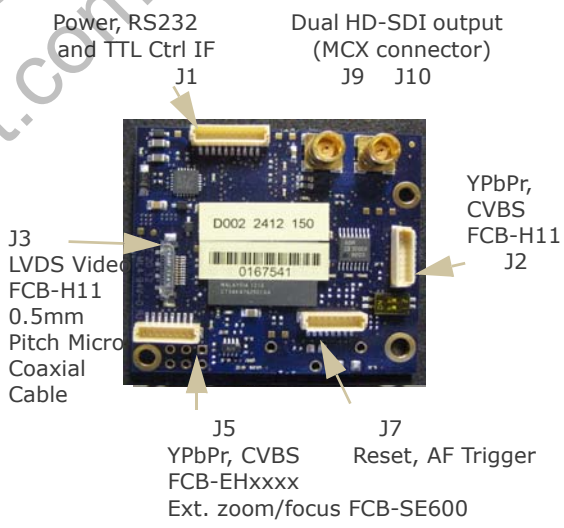
Preliminary Data

Onboard Connectors

PCB Top Side:



PCB Bottom Side:



Note: Arrowheads indicate pin 1 location

Pin Assignment of external Interfaces

J8 HDMI output connector type is Kycon KDMIX_FS1V_WS_B30 (SDI-HDMI-H11-GM and SDI-HDMI-EH-GM only)

J1 JST BM10B-SSRS-TB

Power and Control IF

1 DC IN
2 DC IN
3 GND
4 GND
5 SPARE (reserved for future use, 3.3V max., keep not connected)
6 GND
7 TXD_TTL (serial IF transmit, 3.3V)
8 RXD_TTL (serial IF receive, 3.3V)
9 RXD_232 (serial IF receive, RS232 level)
10 TXD_232 (serial IF transmit, RS232 level)

Note:

Connect RS232 or TTL serial interface, not both at the same time

J2 JST BM08B-SSRS-TB, analog video from FCB-H11

J5 JST BM08B-SSRS-TB, analog video from FCB-EHxxxx

Analog component YPbPr and CVBS output

1 Pr
2 GND
3 Pb
4 GND
5 Y
6 GND
7 CVBS
8 GND

Operation with FCB-SE600

SAFETY NOTE:

Power Supply Voltage is 5.5V DC maximum.

External Keys for Zoom and Focus control
J5 JST BM08B-SSRS-TB
Pull pins 1, 3, 5 or 7 low to activate operation, keep open for idle state

1 ZOOM TELE
2 GND
3 ZOOM WIDE
4 GND
5 FOCUS NEAR
6 GND
7 FOCUS FAR
8 GND

One Push Auto Focus operation

Pull pin 3 of connector J7 to GND (OV) to trigger auto focus operation. Keep it open or pull to 3.3V with a resistor of 1kohms or higher for idle state.

Preliminary Data

J7 JST BM08B-SSRS-TB

External control/reset

1 SPARE (reserved)
2 SPARE (reserved)
3 AF trigger for FCB-SE600
4 SPARE (reserved)
5 SPARE (reserved)
6 SPARE (reserved)
7 RESET EXTERNAL (has 10kohms pullup to 3.3V)
8 GND

Onboard Mode Switch

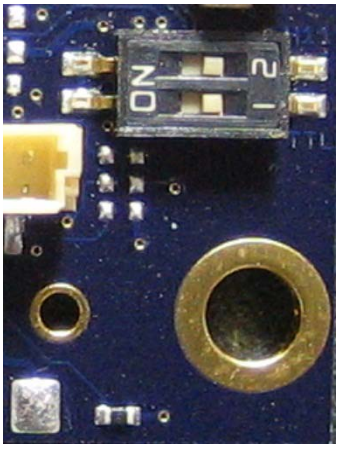
The camera type must be selected by mode switch settings on the pcb bottom side.

Control Interface Select:

SW1 Keep OFF

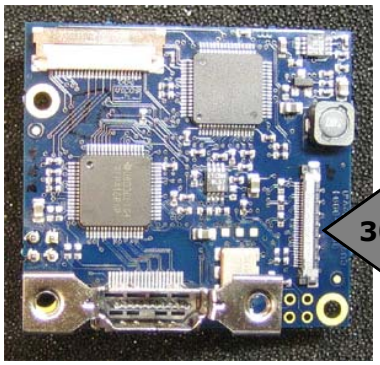
Camera Select:

SW2 OFF = FCB-EH or FCB-SE600
ON = FCB-H11



Connection Diagram for FCB-EH and FCB-SE600 Camera Blocks

SDI-HDMI-H11-GM top side



30pin micro coax cable

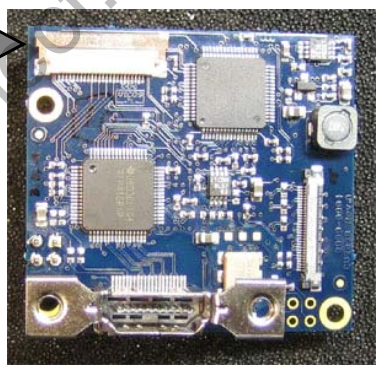
FCB-EH / FCB-SE600

SAFETY NOTE:
Power Supply Voltage for operation with FCB-SE600 is 5.5V DC maximum.

Connection Diagram for FCB-H11 Camera Blocks

SDI-HDMI-H11-GM top side

24pin FFC



FCB-H11

SDI-HDMI-H11-GM bottom side

10pin micro coax cable

Preliminary Data

Video Standard Selection Tables for FCB-EH / FCB-SE600 Solutions

The video standard provided by the camera is automatically detected by the SDI-HDMI-H11-GM module.

SDI-HDMI-H11-GM switch in OFF position.

Camera Setting	SDI-HDMI-H11-GM/SDI-H11-GM /SDI-HDMI-EH-GM/SDI-EH-GM output format	Camera Support
1080i / 50Hz	1080i / 50Hz	FCB-EH6500 and 6300
1080i / 59.94Hz	1080i / 59.94Hz	FCB-EH6500 and 6300
1080i / 60Hz	1080i / 60Hz	FCB-EH6500 and 6300
1080p / 25Hz	1080p / 25Hz	FCB-EH6500 and 6300
1080p / 29.97Hz	1080p / 29.97Hz	FCB-EH6500 and 6300
1080p / 30Hz	1080p / 30Hz	FCB-EH6500 and 6300
720p / 50Hz	720p / 50Hz	all FCB-EH
720p / 59.94Hz	720p / 59.94Hz	all FCB-EH
720p / 60Hz	720p / 60Hz	all FCB-EH
720p / 25Hz	720p / 25Hz	all FCB-EH
720p / 29.97Hz	720p / 29.97Hz	all FCB-EH
720p / 30Hz	720p / 30Hz	all FCB-EH

Table 1: Video output matrix for SDI-HDMI-H11-GM with FCB-EH

Camera Setting	SDI-HDMI-H11-GM/SDI-H11-GM/ SDI-HDMI-EH-GM/SDI-EH-GM output format
1080i / 50Hz	1080i / 50Hz
1080i / 60Hz	1080i / 60Hz
1080p / 25Hz	1080p / 25Hz
1080p / 30Hz	1080p / 30Hz
720p / 50Hz	720p / 50Hz
720p / 60Hz	720p / 60Hz
720p / 25Hz	720p / 25Hz
720p / 30Hz	720p / 30Hz

Table 2: Video output matrix for SDI-HDMI-H11-GM with FCB-SE600

SAFETY NOTE:

Power Supply Voltage for operation with FCB-SE600 is 5.5V DC maximum.

Note: Refer to Sony FCB-EH or FCB-SE600 manuals on camera operation and setting adjustments

Preliminary Data

Video Standard Selection Tables for FCB-H11 Solutions

The video standard provided by the camera is automatically detected by the SDI-HDMI module.

SDI-HDMI-H11-GM switch in ON position.

Camera Setting	SDI-HDMI-H11-GM/SDI-H11-GM/ SDI-HDMI-EH-GM/SDI-EH-GM output format
1080i / 50Hz	1080i / 50Hz
1080i / 59.94Hz	1080i / 59.94Hz
720p / 50Hz	720p / 50Hz
720p / 59.94Hz	720p / 59.94Hz

Table 3: Video output matrix for SDI-HDMI-H11-GM with FCB-H11

Note: Refer to Sony FCB-H11 manual on camera operation and setting adjustments

Preliminary Data

Analog Video Output

SDI-HDMI-H11-GM, SDI-HDMI-EH-GM, SDI-HDMI-EH-GM & SDI-EH-GM provide analog HDTV YPbPr and analog SDTV CVBS video output signals. These signals are directly taken from the camera. The signal availability in different modes depends on the capabilities of the camera model used.

In some camera modes no or only limited analog video output might be available. Please refer to the related camera documentation.

Reset Operation

When applying power to SDI-HDMI-H11-GM, SDI-HDMI-EH-GM, SDI-HDMI-EH-GM & SDI-EH-GM, the camera is also automatically powered. During power up all functions on SDI-HDMI-H11-GM, SDI-HDMI-EH-GM, SDI-HDMI-EH-GM & SDI-EH-GM are reset.

During operation a manual reset can be applied by pulling pin no. 7 of connector J7 to 0V (GND). This resets also the camera.

Note: FCB-EH4300 camera does not support manual reset operations.

Camera Control

Camera control can be done by connecting a PC or CCU via RS232 or serial 3.3V TTL interface to SDI-HDMI-H11-GM, SDI-HDMI-EH-GM, SDI-HDMI-EH-GM & SDI-EH-GM. The interface is passed through to the camera that all VISCA protocol based software can be used.
Serial interface selection must be done be appropriate setting of resistor jumper R54.

Cable Kit Contents

Cable kit for FCB-H11 solutions:

External connecting cables:

1 pcs. - 10pin flying leads cable for power and control, lead length = 15cm / 5.9inch

1 pcs. - 8pin flying leads cable for analog video, lead length = 15cm / 5.9inch

1 pcs. - 8pin flying leads cable for external control, lead length = 15cm / 5.9inch

Camera connecting cables:

1 pcs. - 10pin KEL SSL type micro coaxial cable, connector on both sides, length = 15cm / 5.9inch

Cable kit for FCB-EH and FCB-SE600 solutions:

1 pcs. - 10pin flying leads cable for power and control, lead length = 15cm / 5.9inch

External connecting cables:

1 pcs. - 8pin flying leads cable for analog video (ext. control for FCB-SE600), lead length = 15cm / 5.9inch

1 pcs. - 8pin flying leads cable for external control, lead length = 15cm / 5.9inch

Camera connecting cables:

1 pcs. - 30pin KEL USL type micro coaxial cable, connector on both sides, length = 15cm / 5.9inch

Preliminary Data