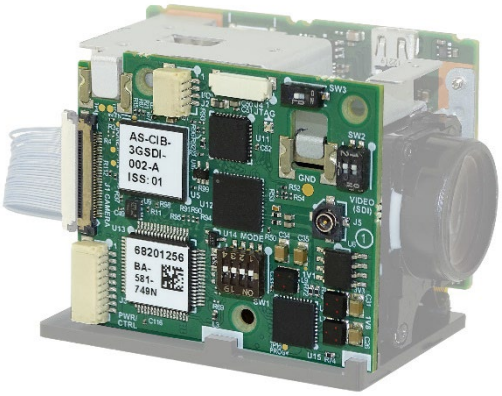
CAMERA INTERFACE BOARD
3G-SDI & HD-SDI

For Harrier, Tamron and Sony Block Cameras

- 3G-SDI interface board for Tamron cameras,
- Sony EV-series and Harrier 10x/3x/40x/55x AF-Zoom cameras
- 1080p/1080i/720p high-definition video output
- Analog composite output (PAL/NTSC/RS-170)
- HD-VLCTM mode for long cable length applications

FEATURES

- 3G-SDI interface solution for Tamron, Sony EV-series and Harrier AF-Zoom cameras.
- Simultaneous analog (PAL/NTSC) when in 720p50/59.94/60 modes.
- HD-VLC mode for long cable length applications.
- Supports all HD modes up to 1080p60.
- VISCA programmable PWM output.
- Video mode selection switches and built-in test pattern.
- TTL serial UART comms port for camera control (3.3V).
- Selectable RS-232 / RS-485 for camera communications.
- Kits for mounting the interface board to Tamron or Sony cameras available.



- Interface boards and cameras can be purchased as pre-assembled modules.

OVERVIEW

The **Harrier 3G-SDI Camera Interface Board** (**AS-CIB-3GSDI-002-A**) is an interface solution from Active Silicon's **Harrier series** of camera interface boards. It provides real-time 3G-SDI output for Tamron cameras, the Sony EV-series cameras and the Harrier 10x, 36x, 40x and 55x AF-Zoom cameras. The interface board can provide simultaneous analog output in Standard Definition (SD) when the camera is operating in 720p50/59.94 modes, along with options for cropping or scaling the analogue output (for 16:9 displays).

On power-up, the camera video mode may be selected by the DIP switch settings on the board. The video modes and other interface board specific functions may also be controlled by serial communications. RS-232, RS-485, and TTL interfaces are supported. There is a built-in test pattern which conforms to the SMPTE RP-219-2002 specification (see Figure 3).

HD Visually Lossless Compression (HD-VLC™) is a technique for compressing HD image data into a lower data rate SDI stream. This allows the use of much greater cable length (three to four times the distance), plus a greater ability to pass through multiple slip rings. A HD-VLC decoder is required at the other end of

the cable to convert back to HD-SDI and other formats (see Active Silicon's "BlueBird SDI Adapter"). HD-VLC output mode is selected by a DIP switch setting.

There are OEM options (via custom firmware) for meta-data to be inserted into the video stream.

In applications where space is at a premium, the interface board may be mounted onto the camera. On the Tamron MP3010M-EV camera it is mounted on the side of the camera by removing the standard side plate, as shown below in Figure 1. On the Harrier and Sony EV-series cameras the board is mounted at the back using a custom bracket (Figure 2). Active Silicon can provide mounting kits that contain all the parts required to do this (see ordering information).

Alternatively, you can design your own mounting solution making use of three M2 counter-sunk holes in the interface board, as shown in Figure 1.

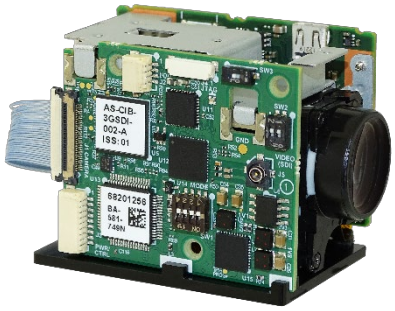


Figure 1. Harrier 10x AF-Zoom 3G-SDI Camera (Tamron MP3010M-EV). The camera interface board replaces the side/base bracket of the camera module.

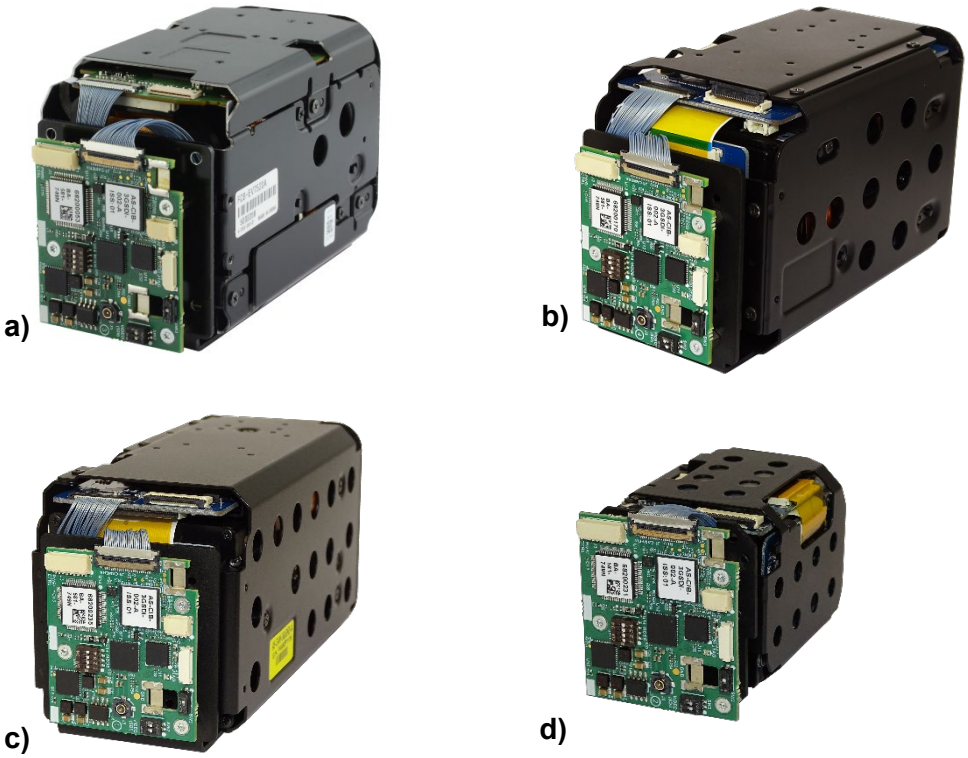


Figure 2. Camera assemblies with the Harrier 3G-SDI Camera Interface Board fitted at the back:
a) Harrier 30x 3G-SDI Camera (Sony FCB-EV7520),
b) Harrier 40x AF-Zoom 3G-SDI Camera,
c) Harrier 36x AF-Zoom HD-SDI Camera (global shutter),
d) Harrier 10x AF-Zoom 3G-SDI Camera.

Video Mode on Power-up

On power-up, the camera interface board will read the SW1 DIP switches and set the camera video mode accordingly. If the DIP switches are set for 'Default Camera Mode' then the camera (and camera interface board) will power-up in the video mode last set on the camera.

For more information see the section on Video and Control Mode DIP Switch (SW1) settings below.

Status LED ("LED1")

The interface board is fitted with multi-color LED to indicate camera status.

Flashing Yellow:	This will occur at power-up; the number of flashes indicates the firmware version.
Flashing Green:	Camera and interface board are powered and in start-up mode. During this period the camera and interface board will not respond to communications and there will be no video output.
Solid Green:	Camera and interface board are powered and working correctly.
Flashing Red:	When there is a fault/error, the red LED will flash a number of times to indicate the type of problem. The number of flashes will match the error code returned by the VISCA Error Code query listed in the section Camera Interface Board VISCA Commands. The LED will continue to flash until the error is cleared.

Test Pattern

A video test pattern output may be selected by (a) driving pin 1 of connector J2 low, or
(b) sending the appropriate VISCA command over serial/USB communications.
For interface board operation using extended VISCA serial commands, refer to the Active Silicon Technical Note on "Extended VISCA Commands".

Figure 3. SMPTE RP-219-2002 test pattern available from the interface board.

Analog Video Out (Pin 3, J3)

Standard resolution composite analog is simultaneously available in HD modes 720p50 (for PAL) and 720p60/59.94 (for NTSC). There are two options for the analog output, selectable via serial control:

(a) the 1280 pixel wide HD image can be cropped to 960 wide by cropping a 120 pixel strip off each side to make a 4:3 aspect ratio Standard Definition (SD) signal, or alternatively,

(b) by pre-warping the image, such that when displayed on a HD monitor in the monitor's stretch-to-fit mode, the original full-width HD signal will be displayed correctly at 16:9 aspect ratio.

Both methods ensure the displayed pixels remain square and that the image is not distorted.

Note: the analog video output must be connected to a 75 Ohm terminated analog display/input.

Serial Camera Control

The camera may be controlled by serial VISCA commands (J3). The VISCA serial signal is routed through the interface board and to the camera. However, this serial signal is also connected to the camera interface board; extended VISCA commands (not used by the camera) may be used to control the interface board. Serial port settings are: parity - none, data bits - 8, stop bits - 1, baud rate is set by the camera but is usually 9600 by default.

For information on interface board operation using extended VISCA serial commands, refer to the section on Camera Interface Board VISCA Commands below.

For information on camera operation using VISCA serial commands, refer to the camera's user manual.

Camera Interface Board VISCA Commands

The VISCA protocol can support connection of up to 8 cameras in a network; each camera is assigned a separate address. The default camera address is 1. The interface board is pre-assigned a fixed VISCA address of 2 so that camera interface board specific commands are differentiated from camera commands.

VISCA commands are composed of a series of hexadecimal format numbers that are sent to the camera. In this document the commands are formatted with a blank space between each byte to aid legibility, but the strings sent to the camera / interface board must be sent without blank spaces.

Camera Interface Board VISCA Commands will generate VISCA standard ACK (A0 41 FF) and Complete (A0 51 FF) responses unless the command is not recognized, in which case a syntax error response (A0 60 02 FF) will be returned. Inquiries are returned in the VISCA compliant format A0 50 xx xx xx FF.

Note: Earlier firmware versions (v.1.2.1 and below) responded to interface board commands and inquiries with responses from VISCA address 1, i.e. in the format 90 41 FF (ACK) and 90,50,xx,xx,xx,FF (inquiries).

Analog video output is only supported when the camera is operating in 720p 50/59.94/60Hz modes. If not required, it may be selectively turned off to reduce power consumption. This may be useful in some use applications, e.g. battery powered applications.

If the video mode DIP switches are set on power-up, the interface board will attempt to change the camera mode and VISCA communications to the camera will be blocked. If the interface board fails to set the camera into the mode set on the DIP switches after 40 seconds it will stop attempting to change the camera mode and send an error message (A0 DE AD FF). After this it will be possible to communicate with the camera enabling the use of VISCA commands/inquiries to diagnose problems and manually set the video mode.

Camera Interface Board Custom VISCA Commands

FUNCTION	COMMAND STRING (Hex)	REPLY PACKET (1)	DESCRIPTION
Camera hard reset (50ms)	82 01 0A 00 FF	A0 41 FF A0 51 FF	Acknowledge Complete
Set Pattern Generation Output Mode	82 01 0A 01 ***xx*** FF Where xx is: 00 - External Control 01 - Pattern Gen off 02 - Pattern Gen on	A0 41 FF A0 51 FF	Acknowledge Complete
Select 4:3 / 16:9 Analog output	82 01 0A 02 **xx** FF Where xx is: 00 - 4:3 (Default) 01 - 16:9	A0 41 FF A0 51 FF	Acknowledge Complete
Set Cross Hairs On/Off	82 01 0A 03 ***xx*** FF Where xx is: 00 – Off (Default) 01 – On	A0 41 FF A0 51 FF	Acknowledge Complete
Set Sync Output Mode	82 01 0A 04 ***xx*** FF Where xx is: 00 – Vsync (Default) 01 – Vsync# 02 – Hsync 03 – Hsync# 04 – Fsync 05 – Fsync# 06 – Logic low 07 – Logic high 08 – PWM output enabled (3)	A0 41 FF A0 51 FF	Acknowledge Complete Vsync - high during vertical blanking, low during active video lines. Hsync - high during horizontal blanking, low during active video. Fsync – interlaced only, low during field 1, high during field 2
Analog On / Off	82 01 0A 05 **xx** FF Where xx is: 00 – Off 01 – On (Default)	A0 41 FF A0 51 FF	Acknowledge Complete
Serial bypass mode (2)	82 01 0A 06 00 FF	A0 41 FF A0 51 FF	Acknowledge Complete In serial bypass mode interface board commands are disabled and all serial data received is repeated to the camera.
PWM output setting (3)	82 01 0A 09 **xx yy** 00 FF	A0 41 FF A0 51 FF	**xx** = frequency divider: range 0x00 to 0xFE Output frequency = 59 kHz / (divider + 1) **yy** = duty cycle: 0x00 (=0%) to 0x64 (=100%)

Notes:

1) Firmware versions 1.2.1 and earlier respond to commands with 90 41 FF.
2) Implemented in firmware versions 2.0.0 upwards.
3) Implemented in firmware versions 3.3.0 upwards.

Camera Interface Board Custom VISCA Inquiries

FUNCTION	INQUIRY STRING (Hex)	REPLY PACKET (1)	DESCRIPTION
Query Interface Board Firmware Version	82 09 0A 00 FF	A0 50 ***r1 r2 r3*** FF	r1 = Major Version r2 = Minor Version r3 = Sub Minor Version
Query Interface Board Hardware Information	82 09 0A 01 FF	A0 50 r1 r2 FF	r1 = Hardware revision r2 = Hardware variant
Query Interface Board Health (5)	82 09 0A 02 FF	A0 50 ***r1 r2*** FF	r1 = Status (Bit 0-6 set indicates no fault condition) Bit 0 = Voltage OK Bit 1 = LVDS PLL clock OK Bit 2 = Si5317 OK Bit 3 = Pixel PLL clock OK Bit 4 = GV770 lock OK Bit 5 = Cam. comms initialized Bit 6 = Running / OK Bit 7 = Error state r2 = Temperature (in hex) +60°C (0x3C) offset. (2)
Query Interface Board DIP Switch Status	82 09 0A 03 FF	A0 50 ***r1*** FF	r1 = DIP Switch Settings
Query Interface Board Enhanced Hardware Information (3)	82 09 0A 04 FF	A0 50 ***r1 r2 r3 r4 r5*** FF	r1 = Project code r2 = Project board r3 = Board issue r4 = Build MSB r5 = Build LSB
Query Interface Board Error Code (5)	82 09 0A 05 FF	A0 50 **r1** FF	r1 = Status Code (Value returned indicates fault condition) 00 = No error 01 = FPGA core temperature 02 = Reserved 03 = Reserved 04 = 1V8 power rail fault 05 = 3V3 power rail fault 06 = 1V1 power rail fault 07 = 2V5 power rail fault 08 = Reserved 09 = Camera comms timeout 0A = Camera video mode/LVDS link width setup fault 0B = Camera LVDS loss of lock 0C = Clock cleaner loss of lock 0D = Pixel clock PLL loss of lock 0E = SDI transmitter loss of lock 0F = Firmware type error

FUNCTION	INQUIRY STRING (Hex)	REPLY PACKET (1)	DESCRIPTION
Query Camera Info. (4)	82,09,0A,08,FF	A0 50 ***r1 r2 r3 r4*** FF	r1 = Camera model r2 = Camera mode r3 = Data width 0x00 = Unknown 0x01 = Single 0x02 = Double r4 = Clock Frequency 0x00 = Unknown 0x01 = 74.25MHz 0x02 = 74.25MHz/1.001 0x03 = 37.125MHz 0x04 = 37.125MHz/1.001
r1 = Camera model 0x00 = Unknown 0x10 = MP1010M-VC 0x11 = MP1110M-VC 0x12 = MP1110M-WP 0x13 = MP2030M-GS 0x14 = MP1010M-WP 0x15 = MP3010M-EV 0x20 = FCB-EV7500 0x21 = FCB-EV7520 0x22 = FCB-EV7520A 0x23 = FCB-EV7300 0x24 = FCB-EV7310 0x25 = FCB-EV7100 0x26 = FCB-EV5300 0x27 = FCB-EV5500 0x28 = FCB-EV9500L 0x29 = FCB-EV9520L 0x30 = Harrier 10LHD (iss.01) 0x31 = Harrier 36LGHD 0x32 = Harrier 40LHD 0x33 = Harrier 10LHD (iss.02) 0x34 = Harrier 55LHD 0x40 = 21Z10L		r2 = Camera mode 0x00 = Unknown 0x10 = 1080p60 0x11 = 1080p59.94 0x12 = 1080p50 0x13 = 1080p30 0x14 = 1080p29 0x15 = 1080p25 0x20 = 1080i60 0x21 = 1080i59 0x22 = 1080i50 0x30 = 720p60 0x31 = 720p59 0x32 = 720p50 0x33 = 720p30 0x34 = 720p29 0x35 = 720p25	

Notes:

1) Firmware versions 1.2.1 and earlier respond to interface board inquiries with responses from VISCA address 1, i.e. in the format 90,50,xx,xx,xx,FF.
2) Temperature (in degrees C) is measured in the FPGA device and is reported with a +60°C offset in hexadecimal format. To calculate the temperature in the FPGA, convert hexadecimal value reported by extended VISCA command to decimal then subtract 60 to calculate the FPGA temperature in degrees C.
3) Implemented in firmware versions 2.1.0 upwards.
4) Implemented in firmware versions 2.4.0 upwards.
5) Implementation changed in firmware versions 3.3.0 upwards.

CONNECTOR SPECIFICATION

KEL30 Connector ("Camera"): 30 way (J1)

The interface board is fitted with a 30-way miniature connector to link to the video output connector on the camera.

Connector type: KEL USL00-30L

Mating cable: KEL USL20-30SS-010-C (100mm length) or KEL USL20-30SS-005-C (50mm length) 30-way micro-coax cable.
This cable can be supplied with the interface board (see ordering information below).
Other lengths also available subject to minimum order quantities.

Input/Output Connector ("I/O"): 4-way (J2)

The interface board is fitted with an industry standard 4-way connector for test pattern and reset control, plus VSync out.

Connector type: JST SM04B-SRSS-TB

Mating cable: Suitable cable can be purchased as part of a cable kit (see ordering information).

PIN	SIGNAL	LEVEL	NOTES
1	PGEN#	TTL compatible 5V tolerant. Active low signaling.	Input pin with 10kΩ pullup resistor. Drive low to enable the SMPTE test pattern.
2	SYNC OUT / PWM output	TTL (3.3V CMOS compatible with 5V TTL)	Default setting Vsync, active high. Alternate configurations selectable by extended VISCA command.
3	GND	0V	GND
4	RESET#	TTL compatible 5V tolerant. Active low signaling.	Input pin with 10kΩ pullup resistor. Drive low to reset the camera and interface board.

Note: The RESET# input, after some signal conditioning to remove noise, is also fed into the camera, so a reset from this input will reset both the camera and the interface board.

Power and Control Connector ("PWR/CTRL"): 9-way (J3)

The interface board is fitted with an industry standard 9-way connector for power, serial control and analog video out.

Connector type: JST SM09B-SRSS-TB

Mating cable: Suitable cable can be purchased as part of a cable kit (see ordering information).

PIN	SIGNAL	LEVEL	NOTES
1	RS-232 RxD input / RS-485 B	TIA/EIA-232-F / TIA/EIA-485-A	VISCA comms selected using DIP switch SW2. See section below.
2	RS-232 TxD output / RS-485 A	TIA/EIA-232-F / TIA/EIA-485-A	VISCA comms selected using DIP switch SW2. See section below.
3	Analog SD video out	PAL / NTSC / RS-170 signal levels	PAL in 720p50 mode, NTSC in 720p59.94/60 mode.
4	Analog video GND	0V	Video GND.
5	Power GND	0V	GND
6	DC Power In	8.25V to 15V (1)	Power supply, nominal 9V.
7	VISCA GND	0V	GND for VISCA Comms.
8	Logic RxD input	3.3V CMOS (3.3V/5V TTL compatible, with internal 10k pull up to 3.3V).	VISCA comms selected using DIP switch SW2. See section below.
9	Logic TxD output	3.3V CMOS (3.3V / 5V TTL compatible).	VISCA comms selected using DIP switch SW2. See section below.

Notes:

1) The interface board supports input voltages up to 15V, note that this supply is also used to power the connected block camera. To avoid damage to the camera the voltage supplied to the interface board must be within the specification of the camera connected to the board.

JTAG Connector (J4)

Test connector used in manufacturing for circuit verification.

3G-SDI Output Connector ("Video (SDI)") (J5)

The interface board is fitted with a Hirose H.FL Micro Coaxial Connector (75 Ohm).

Connector type: Hirose Micro Coaxial Connector (Receptacle), part number H.FL-R-SMT(01).

Mating Connector: Use mating cable with 75 Ohm characteristic impedance, for example Hirose part number H.FL75-2LP-084H-A-100. This cable can be purchased as part of a cable kit (see ordering information).

Video and Control Mode DIP Switch (SW1)

The interface board is fitted with a 4-way DIP switch to select various video output modes.

SW1-4	SW1-3	SW1-2	SW1-1	VIDEO FORMAT	MODE
OFF	OFF	OFF	OFF	Default Camera Mode (1)	0
OFF	OFF	OFF	ON	1080p60 (2)	1
OFF	OFF	ON	OFF	1080p59.94 (2)	2
OFF	OFF	ON	ON	1080p50 (2)	3
OFF	ON	OFF	OFF	1080p30	4
OFF	ON	OFF	ON	1080p29	5
OFF	ON	ON	OFF	1080p25	6
OFF	ON	ON	ON	1080i60	7
ON	OFF	OFF	OFF	1080i59.94	8
ON	OFF	OFF	ON	1080i50	9
ON	OFF	ON	OFF	720p60	10
ON	OFF	ON	ON	720p59.94	11
ON	ON	OFF	OFF	720p50	12
ON	ON	OFF	ON	720p30	13
ON	ON	ON	OFF	720p29	14
ON	ON	ON	ON	720p25	15

Notes:

1) "Default Camera Mode": The camera video mode is changed by VISCA serial commands, followed by a camera reset (there is also the camera hard reset in the extended VISCA commands which will also serve this purpose). On power-up, the camera will start in the video format/mode that was being used when it was last powered down. VISCA serial commands can then be used to change video mode.

2) Due to the high data bandwidth required, to output these video modes (above 1080p30) cameras **must** be set to dual LVDS mode. For other modes (1080p30 and below) the camera must be set to single LVDS mode. **When using VISCA commands to change camera video mode the LVDS mode must be set correctly, otherwise there will be no video output from the camera**.
The Harrier 36x AF-Zoom Camera does not support dual LVDS mode hence video modes that require bandwidth greater than 1080p30 are not supported.

3) **The DIP switches to select the Video Format are only read on power-up.** Therefore, to change mode using the DIP switches, power down the camera, set the switches and then power-up the camera. DIP switches will only be effective for the operating modes supported by the camera currently in use.

4) Once the camera has completed power-up and is in the video mode selected by the DIP switches, VISCA serial commands can change the camera video mode and select any of the modes supported by the camera. See note 2).

5) On power-up, if the video mode DIP switches are set the interface board will attempt to change the camera mode and VISCA communications to the camera will be temporarily blocked. If the interface board fails to set the camera into the mode set on the DIP switches after 40 seconds, it will stop attempting to change the camera mode and send an error message (A0 DE AD FF); after this it will be possible to communicate with the camera. This enables the use of VISCA commands/inquiries to diagnose problems and manually set the video mode.

Communications Mode Selection (SW2)

The interface board is fitted with a 2-way DIP switch to select the serial communications standard.

SW2-2	SW2-1	Video Format
OFF	OFF	RS-232 VISCA communications on J3 pins 1 and 2.
OFF	ON	RS-485 VISCA communications with RS-485 termination ***disabled*** on J3 pins 1 and 2.
ON	OFF	RS-485 VISCA communications with RS-485 termination ***enabled*** on J3 pins 1 and 2.
ON	ON	TTL VISCA communications on J3 pins 8 and 9. Transceivers connected to J3 pins 1 and 2 will be shut down. Applications using this configuration should leave J3 pins 1 and 2 unconnected.

Digital Transmission Standard Selection (SW3)

The interface board is fitted with a 1-way DIP switch to select the SMPTE or HD-VLC digital output standards.

SW3	Function
OFF	SMPTE compliant output.
ON	HD-VLC compressed output.

CONFORMANCE

3G-SDI:	Compatible with SMPTE 424M.
HD-SDI:	Compatible with SMPTE 292M.
Approvals:	Active Silicon makes the following approval statements:
CE	In accordance with the CE Marking regulations, the **Harrier 3G-SDI Camera Interface Board** is not a finished product and is supplied for further integration into a finished product that will be CE marked by the final manufacturer/integrator. Therefore, no CE marking or Declaration of Conformity is required or allowed.
RoHS3	This product is compliant with the RoHS3 requirements (Directive 2015/863/EU).
REACH	Please contact Active Silicon for the latest formal REACH declaration (EC 1907/2006).
EMC	This product is designed to be compliant with the following requirements when housed in a suitable enclosure: • EN 55022:2010 (Class A) and EN 55024:2010 (EU Directive 2014/30/EU Electromagnetic Compatibility • FCC Rules for Class A digital devices
UL	All printed circuit boards used in this product are manufactured by UL recognized manufacturers and have a flammability rating of 94-V0.

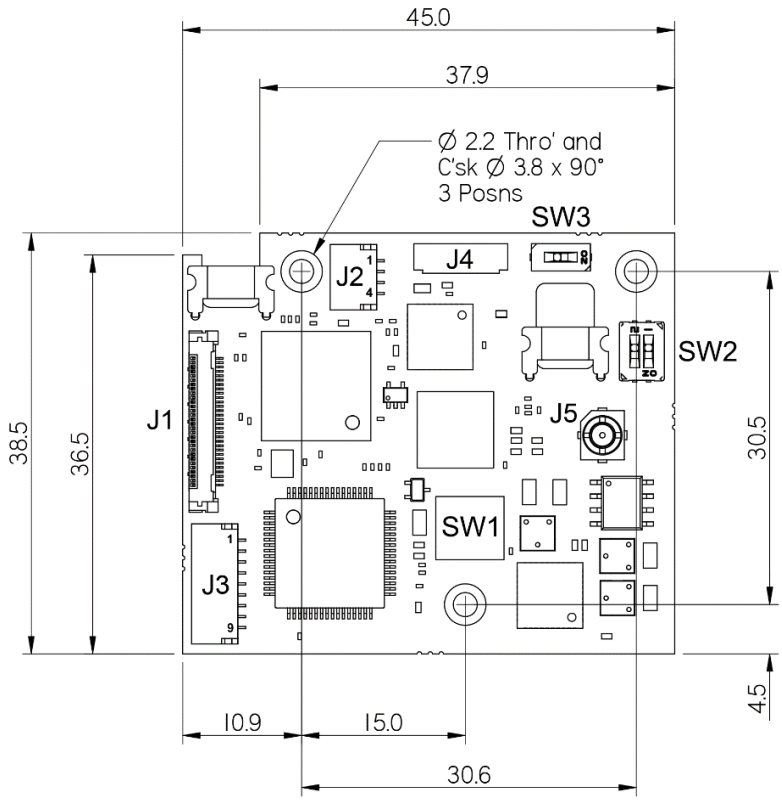


Figure 4. Harrier 3G-SDI Camera Interface Board (AS-CIB-3GSDI-002-A) mechanical overview (all dimensions in mm).

PHYSICAL AND ENVIRONMENTAL DETAILS

Dimensions:	45mm x 38.5mm
Weight:	8g (interface board only, no cables).
Power Supply:	8.25V to 15V
Power Consumption:	0.65W - Typical power at 1080p60, values will vary with camera/operating mode. Note: this does not include camera power.
Storage Temperature:	-20°C to +70°C
Operating Temperature:	-5°C to +60°C (ambient environment).
Relative Humidity:	10% to 90% non-condensing (operating and storage).

ORDERING INFORMATION

PART NUMBER	***DESCRIPTION***
AS-CIB-3GSDI-002-A	Harrier 3G-SDI Camera Interface Board. Board only, no cables included.
AS-CIB-3GSDI-002-A-CC	Harrier 3G-SDI Camera Interface Board with High Performance Acrylic conformal coating (ElectroLube HPA).
AS-CIB-3GSDI-002-10LHD-A	Harrier 10x AF-Zoom 3G-SDI Camera.
AS-CIB-3GSDI-002-3010-A	Harrier 10x AF-Zoom 3G-SDI Camera (Tamron MP3010M-EV).
AS-CIB-3GSDI-002-9520L-A	Harrier 30x AF-Zoom 3G-SDI Camera (Sony FCB-EV9520L).
AS-CIB-3GSDI-002-9500L-A	Harrier 30x AF-Zoom 3G-SDI Camera (Sony FCB-EV9500L).
AS-CIB-HDSDI-002-36LGHD-A	Harrier 36x AF-Zoom HD-SDI Camera with global shutter.
AS-CIB-3GSDI-002-40LHD-A	Harrier 40x AF-Zoom 3G-SDI Camera.
AS-CIB-3GSDI-002-55LHD-A	Harrier 55x AF-Zoom HD-SDI Camera.
AS-CIB-3GSDI-002-EVAL-B	Evaluation Kit for Harrier 3G-SDI and all Harrier 3G-SDI camera assemblies. The kit contains power supply, cabling (***AS-CIB-CBLKIT-002-B***), 30-way micro-coax cable (***AS-CIB-USL30-100MM***) and the Harrier Evaluation Board with PC serial interface (via USB UART). Not included: Camera and camera interface board.
AS-CIB-USL30-100MM	30-way micro-coax cable for connecting the interface board (J1) to the camera. Length 100mm. (Manufacturer: KEL, part number: USL20-30SS-010-C)
AS-CIB-USL30-50MM	30-way micro-coax cable for connecting the interface board (J1) to the camera. Length 50mm. (Manufacturer: KEL, part number: USL20-30SS-005-C)
AS-CIB-CBLKIT-002-B	Cable kit for ***AS-CIB-3GSDI-002-A*** containing H.FL micro coax cable, BNC adapter and control cables for J2 and J3.
AS-CIB-BRK-001-A	Bracket to fit the ***AS-CIB-3GSDI-002-A*** interface board to the side of a Tamron MP3010M-EV camera after removing the original base bracket.

PART NUMBER	DESCRIPTION
AS-CIB-BRK-007-A	Metal bracket, screws and spacers for mounting the ***AS-CIB-3GSDI-002-A*** to a Sony FCB EV-series cameras, Harrier 36x or Harrier 40x AF-Zoom Camera.
AS-CIB-BRK-009-A	Metal bracket, screws and spacers for mounting the ***AS-CIB-3GSDI-002-A*** to a Harrier 10x AF-Zoom Camera.

Active Silicon offer custom design services and can adapt the product if it does not meet all your requirements. We are happy to discuss your system requirements and are looking forward to delivering the product you need.

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