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ELECTRONIC GROUP, INC
480-635-8400 p * aegis-g2@aegiselect.com
http://www.aegis-elec.com

USB3-MP10-GM

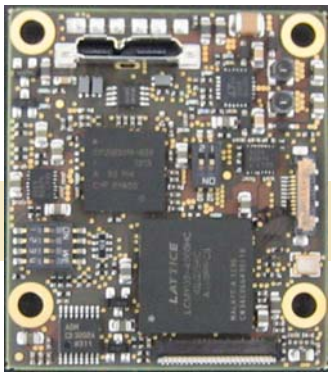
Data Sheet - USB 3.0 Super Speed HD Video Streamer

This 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 fibre cables.

USB3-MP10-GM connects to the digital video interface of Tamron's MP1010M-VC block camera and supports several progressive HDTV formats.

USB3-MP10-GM - 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
+ 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 Tamron MP1010M-VC camera block
+ Full USB bus powered camera solution possible depending on camera
+ Power supply voltage for camera is generated onboard



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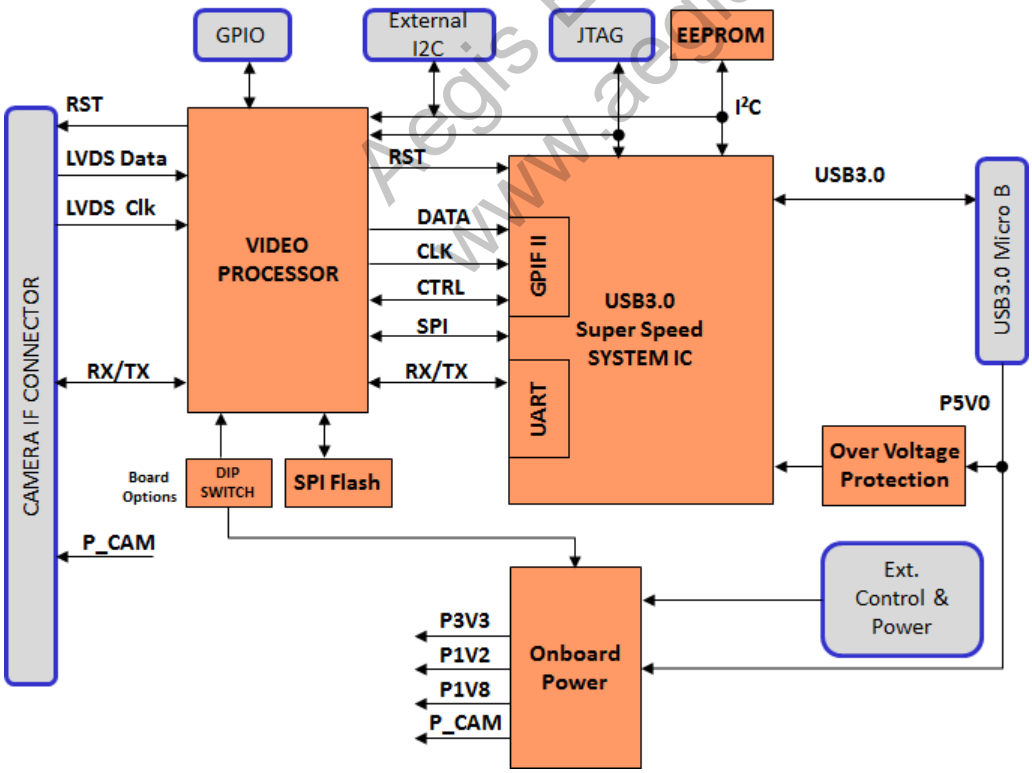
Block Diagram USB3-MP10-GM



Supported Camera Blocks

Model	Comment
MP1010M-VC	Progressive HD Video Standards

Supported Video Standards

The following HDTV video standards are supported by the USB3-MP10-GM. Note that video standard availability is always dependent on the capability of the camera block used.

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

Note: As interlace video modes are not supported, make sure to set camera to any supported progressive video mode to enable correct video image data transmision to any host PC.

Host (PC) - Device Communication

USB3-MP10-GM operates always as USB device which sends UVC compliant video data to a host PC. The host also communicates with the USB3-MP10-GM via a serial communication channel (USB UART).

Connecting the USB3-MP10-GM to the Host PC

Operating System Support
USB3-MP10-GM can be operated with operating systems which fully support USB UVC type data and communication. Currently Microsoft Windows 7 and Windows.1 8 (32 and 64bit) operating systems are supported.

Driver Requirements
Full UVC compliant driver is required. Such drivers are supplied with Microsoft Windows 7 and Windows 8.1 <*usbvideo.sys*>. Manual driver installation is not necessary. For the USB UART feature, the <*usbser.sys*> class driver is used. Aivion provides suitable driver assignment files.

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 information.

Controlling USB3-MP10-GM from the Host PC via USB UART
USB3-MP10-GM supports the USB UART functionality. Cameras connected to USB3-MP10-GM can be controlled via a virtual COM part. software which uses COM ports can be used. The USB UART channel is transparent for any protocol. Communication speed is 9600bit/s or 38400bit/s maximum. Other COM port settings are (8N1).

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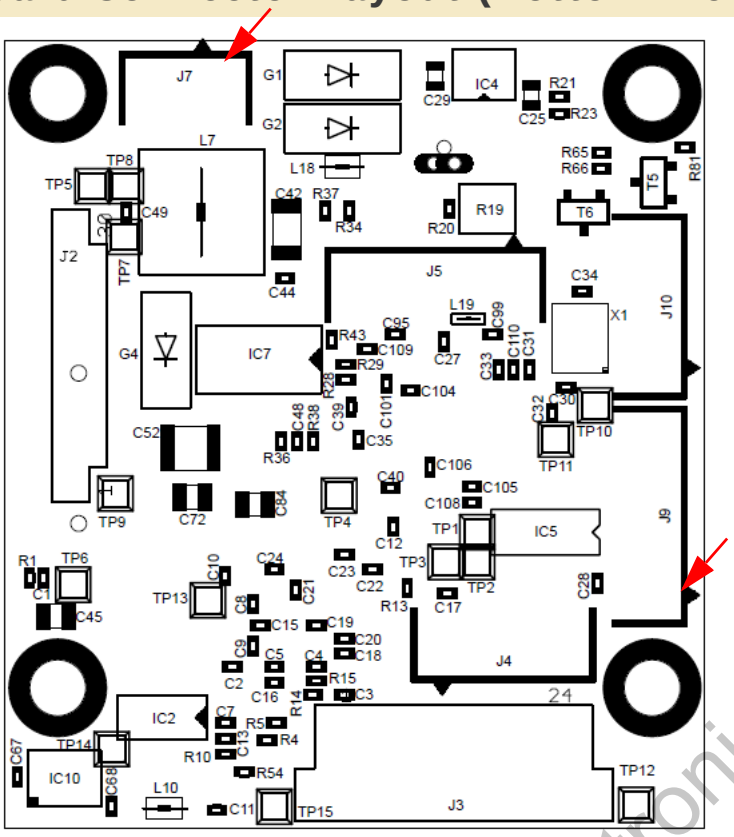
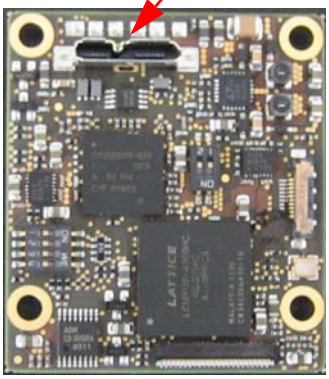
Board Connector Layout (Bottom View)

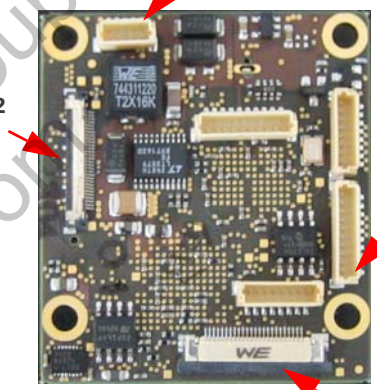


PCB top side:

USB3 microB connector



PCB bottom side:



Dual Select Switch 1:

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

SW 1-1:

OFF: Camera Power = 11.2V (+/-5%)

ON: Camera Power = 5.6V (do not use)

SW 1-2:

Keep always ON.

Quad Select Switch 2:

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

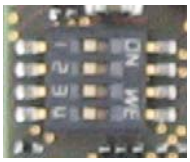
SW 2-3:

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

ON: Camera control over RS232 UART (connector J9)

SW 2-4:

Keep always ON



J2: Camera LVDS connector

J3: Do not connect

J9: RS232 UART connector

J7: External power connector (arrow marks pin 1):

Pins 1, 2: Input voltage 5V to 7V DC

Pins 4, 5: GND

Pin 3: System reset, pull to GND for reset

J4, J5, J10: do not connect

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: Contact techsupport@aivion.com regarding using external power.

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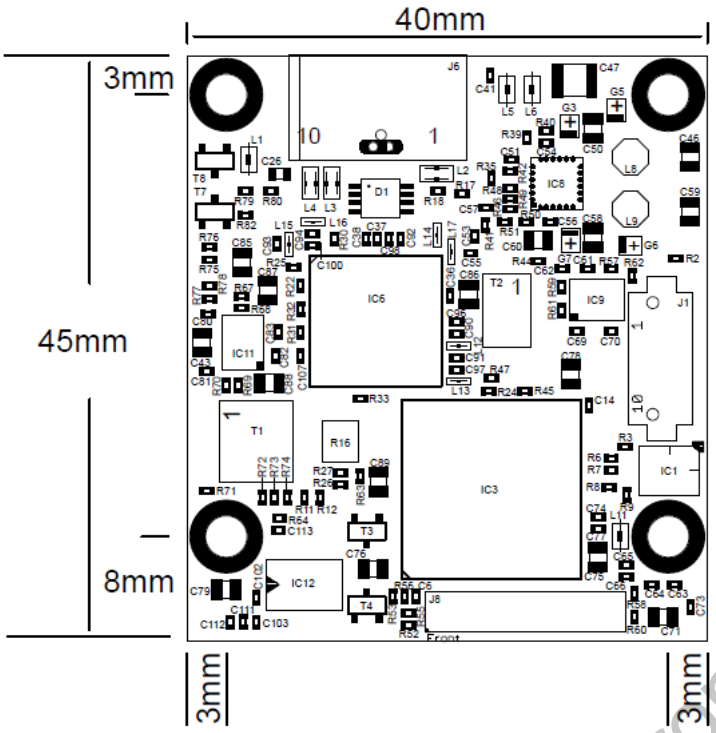
Board Mechanical (Top View)

Mounting Holes Drill=3.2mm, Land=5.6mm



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