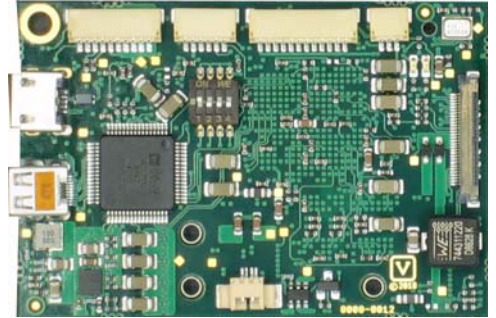


Thunder Link is a family of small form factor modules for formatting and converting generic digital video streams to standard compliant formats. Different interface standards are supported from the transmitter side including DVI/HDMI, 3G-SDI and HD-SDI. Supported physical media are copper and fibre cables.

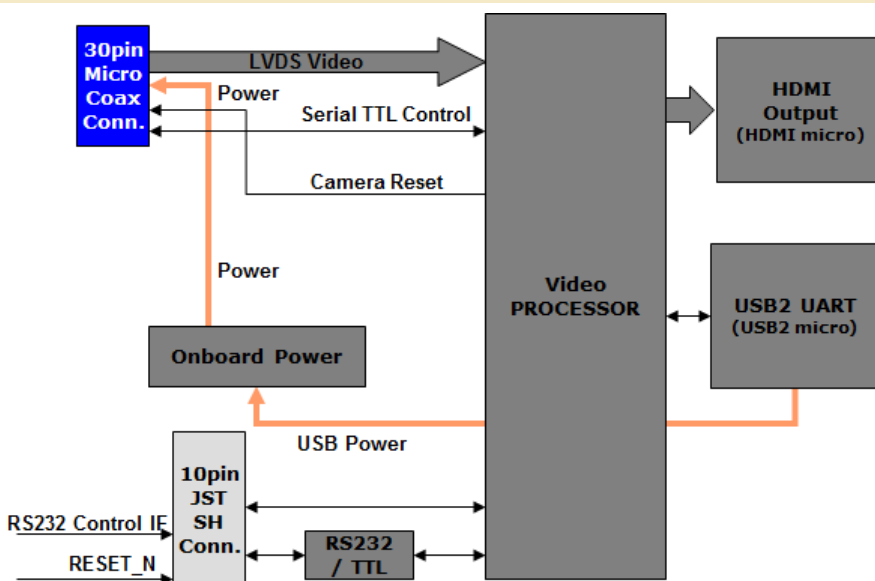
These modules connect to the digital video interface of Tamron block cameras and support several progressive and interlace HDTV formats. TL8652 outputs HDMI up to 1080p60.

TL8652/TL8652A Features

- + Supports Tamron MP1010M-VC ultra compact camera module
- + Supports Tamron MP1110M-VC ultra compact camera
- + Digital 4channel LVDS video input from camera
- + 1080p output at 60Hz, 50Hz, 30Hz and 25Hz
- + 720p output at 60Hz and 50Hz
- + 1080i output at 60Hz and 50Hz
- + HDMI 1.4 output, RGB444 or YCbCr422 colour format selectable
- + Native digital signal processing chain for best image quality
- + CVBS loop out on dedicated connector (MP1110M-VC only)
- + Integrated USB2 UART for camera control
- + RS232 and TTL level serial control interface
- + USB powered 5V DC
- + Board Side Mount
- + Onboard MEMS microphone with 1ch. audio output over HDMI (TL8652A only)



Block Diagram TL8652



Order Codes:

TL8652 - HDMI output

TL8652A - HDMI output with 1CH audio



3D CAD model (Step Format) is available on request.

Specification Camera Interface

INPUTS:	
DATA	4 CH. LVDS digital video (from camera)
CLOCK	LVDS (from camera)
CONTROL Rx	3.3V TTL serial control interface
OUTPUTS:	
CONTROL Tx	3.3V TTL serial control interface
RESET	3.3V TTL, active low
Camera Power	9.5V (typ.)

30 wire micro coaxial cable is supplied with TL8652 (length=20cm).

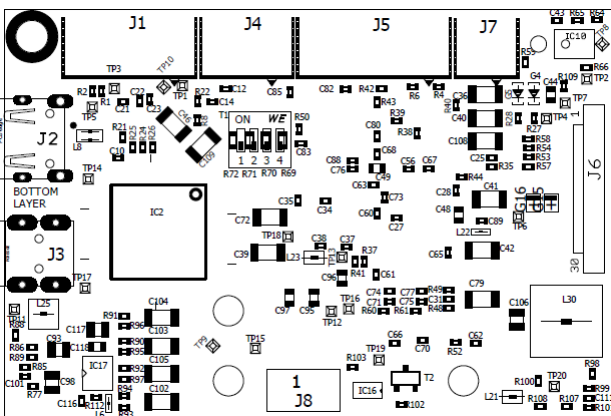
Power and Environment

POWER INPUT:
5V DC over USB2 micro connector (USB3 host port or powered USB3 hub required)
Power consumption (MP1010M-VC + TL8652) 4.5W/900mA (cam motors inactive)
Power consumption TL8652: 1.5W, 300mA @ 5V DC (typ.)
Power consumption value conditions:
Power 5V DC, video mode 1080p60
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
Humidity: 20%-80%

Board Mechanical



Board length 61mm
Board width 41mm

All dimensions in mm.
Maximum top component height = 3.0mm (spacer height)
Maximum bottom component height = 3.0mm
PCB thickness = 1.49mm
Mounting hole drill diameter 3.2mm
Mounting hole land diameter 5.2mm
Weight 17.5g (without cables)

SAFETY NOTES: All digital inputs are specified for maximum voltages of 3.3V (+5%).

Data subject to change without prior notice.

Pin Assignment of I/O Connectors

- J4** JST SM06B-SRSS-TB, do not connect
- J5** JST SM12B-SRSS-TB, do not connect
- J8** Wuerth Electronics 653102131822, do not connect

J6 KEL USL00-30L-A
Camera IF, use supplied 30wire micro coaxial cable only

J1 JST SM10B-SRSS-TB
Reset and RS232 Control IF

- 1 Do not connect
- 2 Do not connect
- 3 GND
- 4 GND
- 5 Reset / Shut Down, pull to GND to reset/shut down TL8652 and camera*
- 6 GND
- 7 Do not connect
- 8 Do not connect
- 9 RXD_232 (serial IF receive, RS232 level)
- 10 TXD_232 (serial IF transmit, RS232 level)

*for reset, pull to GND for one second or longer

- J2** USB2 micro connector
- J3** HDMI micro connector

- J7 JST SM03B-SRSS-TB, CVBS output**
- 1 GND
 - 2 CVBS analog video output
 - 3 GND

Note on CVBS video output:

CVBS analog video output is available with Tamron MP1110M-VC only. In this case the camera monitoring mode (register 72) must be set to NTSC or PAL video. Refer to Tamron MP1110M-VC technical manual for further details.

In NTSC or PAL mode, there will be no HDMI output signal available from TL8652/A.

Onboard Mode Switches

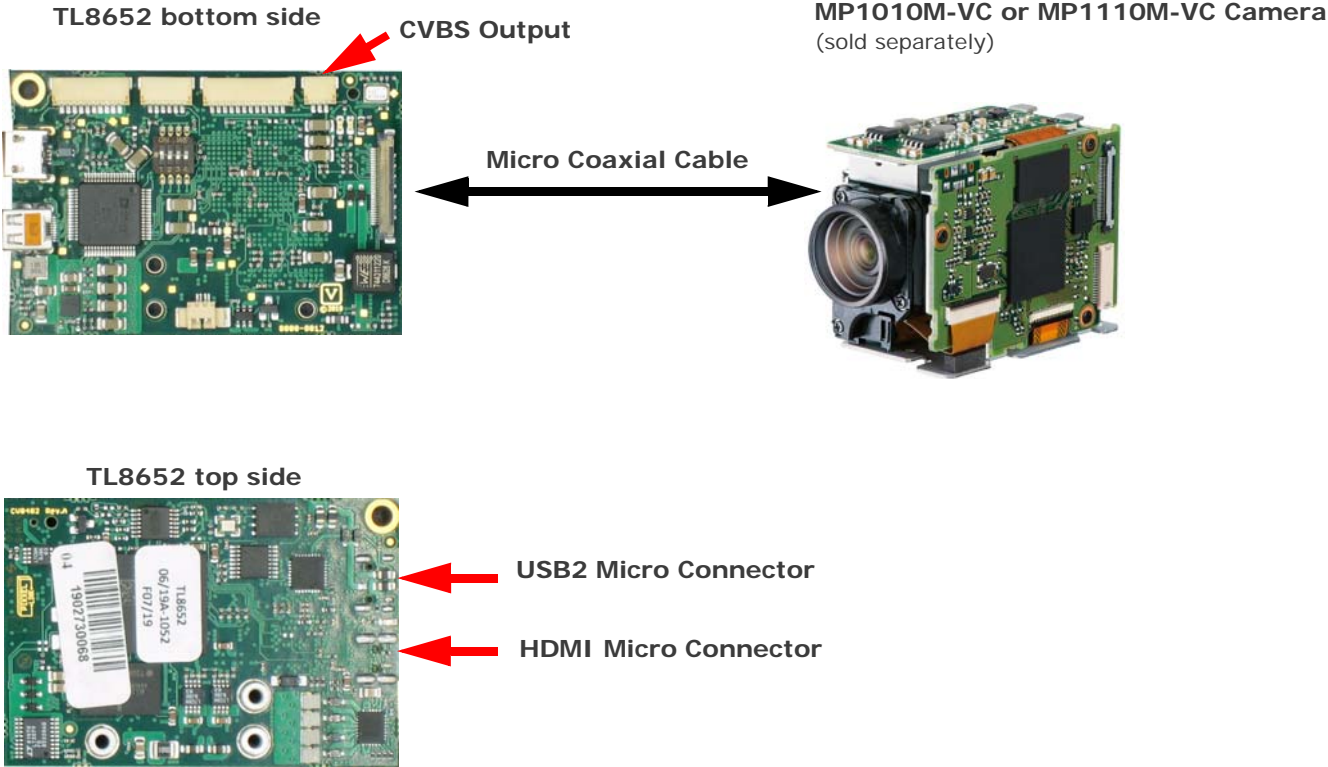
Switch	OFF (default)	ON
1 - factory use	--	Keep ON
2 - Camera control mode	USB UART	RS232
3 - Colour format	RGB444 output	YCbCr422 output
4 - factory use	Keep OFF	--

Table 1: Onboard Switch Functions

Data subject to change without prior notice.

SAFETY NOTES: All digital inputs are specified for maximum voltages of 3.3V (+5%).

Connection Diagram



TL8652 Side Mount on MP1x10M-VC Camera

TL8652 can be directly mounted on side of camera (fitting screws included). PCB has three metal spacers assembled.



Metal spacer for side mount



SAFETY NOTES: All digital inputs are specified for maximum voltages of 3.3V (+5%).

Data subject to change without prior notice.

Reset Operation

When applying power to TL8652, the camera is also automatically powered. During power up all functions on the video transceiver board, are reset and initialized.

During operation a manual reset can be applied by pulling pin no. 5 of connector J1 to 0V (GND). This resets also the camera.

Camera Control

Camera control can be done by connecting a PC or CCU via USB or RS232 interface to TL8652. The interface is passed through to the camera that all VISCA protocol based software can be used. Please contact techsupport@aivion.com in case you need assistance for USB UART driver installation.

Cable Kit Contents

TLCK-B3 cable kit:

External connecting cables:

1 pcs. - 3pin flying leads cable for CVBS video output, lead length = 15cm / 5.9inch

Camera connecting cables:

1 pcs. - 30pin KEL USL type micro coaxial cable, connector on both sides, length = 20cm / 7.8inch

Onboard MEMS Microphone

TL8652A has an onboard MEMS microphone on the bottom side. Sound waves can pass to the microphone through a small PCB hole. Refer to images below for details. The microphone provides 1ch mono sound output. The audio signal is send out over the HDMI interface. Please contact techsupport@aivion.com for further information on using the microphone.



SAFETY NOTES: All digital inputs are specified for maximum voltages of 3.3V (+5%).

Data subject to change without prior notice.