TL7550 / TL7551 / TL7552

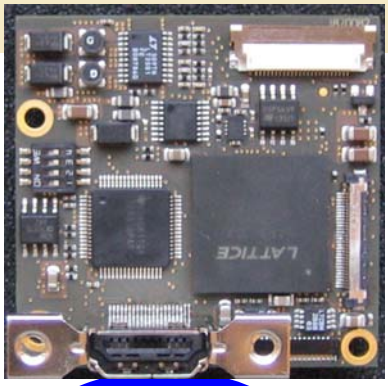
Dual HD-SDI / DVI(HDMI) Output Video Transceiver

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 Koeisha's KSM block cameras and support several progressive and interlace HDTV formats. As no analog to digital conversion is done on these modules, excellent output image quality is achieved.

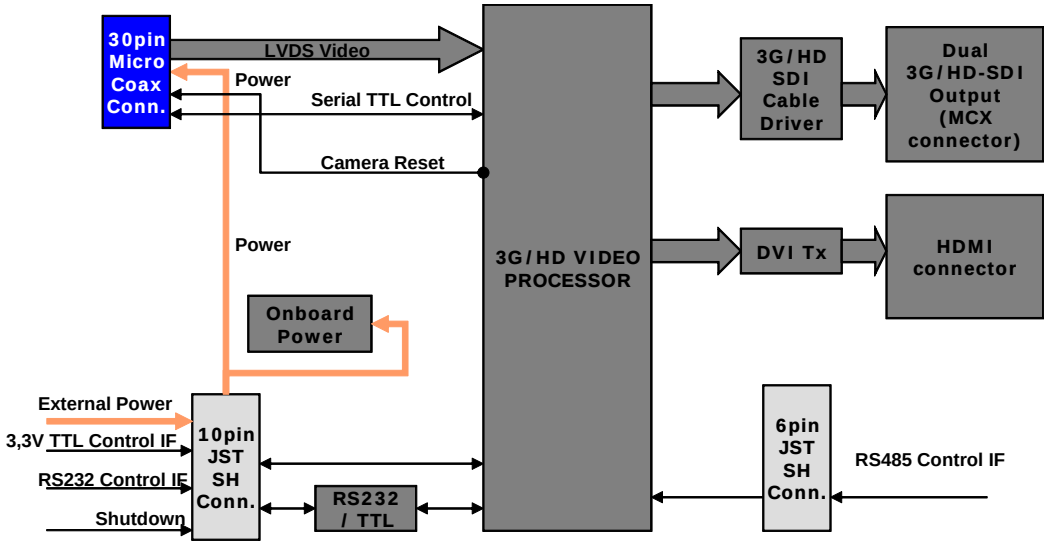
TL755x Series Features

- + Supports Koeisha KSM201L-F and KSM203
- + Digital 4channel LVDS video input from camera
- + 1080p output at 30Hz and 25Hz
- + 720p output at 60Hz, 50Hz, 30Hz and 25Hz
- + 1080i output at 60Hz and 50Hz
- + Full automatic video input standard detection
- + Dual HD-SDI outputs (TL7550 and TL7551 only)
- + SDI outputs compliant to SMPTE424M / SMPTE292M
- + DVI video output over HDMI connector (TL7550 and TL7552 only)
- + Native digital signal processing chain for best image quality
- + RS232 and TTL level serial control interface
- + Robust RS485 differential serial control interface
- + Supply voltage 5V or 12V DC regulated
- + Board temperature monitoring with alert function



Dual HD-SDI + DVI(HDMI) Output

Block Diagram TL7550



Order Codes:

TL7550

Dual HD-SDI output plus DVI(HDMI) output

TL7551

Dual HD-SDI output

TL7552

DVI(HDMI) output

TL755xCK

Cable Kit

AIVION
Modular Imaging & Video Solutions

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

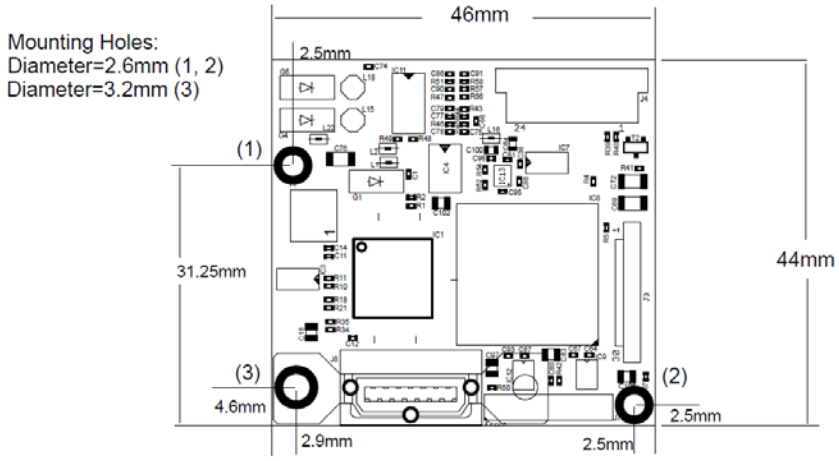
Power and Environment

POWER INPUT:
7V to 12V DC regulated (13V DC absolute maximum)
Power consumption (KSM201L-F + TL7550) 5.76W (cam motors inactive)
Power consumption TL7550: 260mA @ 12V DC (typ.)
Power consumption value conditions:
Power 12V DC, video mode 1080p60
Ambient temperature +25°C/77°F
Humidity 30%

For 1080p30 operation:
Power consumption (KSM201L-F + TL7550) 4.68W (cam motors inactive)

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



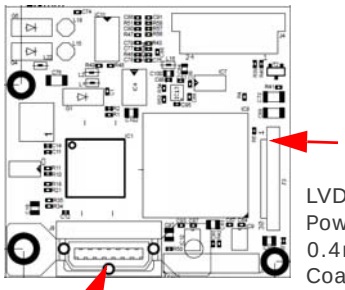
Maximum top component height = 10.5mm (HDMI connector)

Maximum bottom component height = 6.8mm (MCX connectors)

PCB thickness = 1.56mm

Onboard Connectors

PCB Top Side:

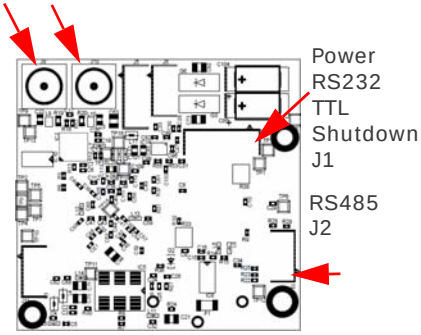


J3
LVDS Video In, Power, Serial Ctrl, 0.4mm Pitch Micro Coaxial Cable

J8
DVI Output (HDMI connector)

PCB Bottom Side:

Dual HD-SDI output (MCX connector)
J9 J10



Power
RS232
TTL
Shutdown
J1

RS485
J2

Note: Arrowheads indicate pin 1 location

J4, J5, J6, J7, J11: Do not connect

SAFETY NOTES:

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

Pin Assignment of external Interfaces

J8 HDMI connector type is Molex 48307-8012 or equivalent

(for TL7550 and TL7552 only)

J1 JST BM10B-SRSS-TB

Power and RS232/TTL Control IF

1 DC IN
2 DC IN
3 GND
4 GND
5 Reset / Shut Down, pull to GND to reset/shut down TL7550 and camera*
6 GND
7 TXD_TTL (serial IF transmit, 3.3V) and/or temperature alert output
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

J9, J10 75 ohms MCX coaxial jack

(for TL7550 and TL7551 only)

HD-SDI outputs

J2 JST BM06B-SRSS-TB

RS485 Control IF **

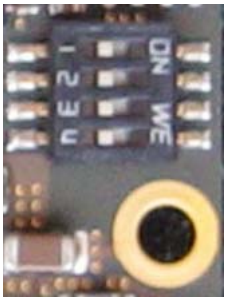
1 TXD_P (to controller)
2 TXD_N (to controller)
3 RXD_N (from controller)
4 RXD_P (from controller)
5 GND
6 3.45V typ. (max. current 50mA)

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

Onboard Mode Switches

Switch	OFF (default)	ON
1 - no function	Keep OFF	--
2 - cam control	RS232/TTL	RS485
3 - temp alert enable	no alert on J1/ pin7	J1/pin7 alert enabled
4 - mode	Keep OFF	--

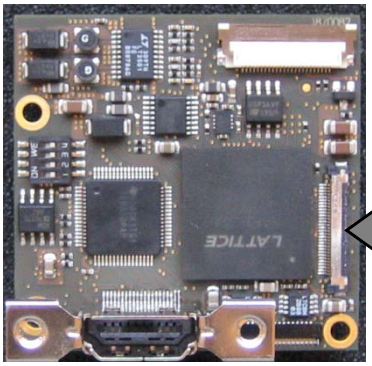
Table 1: Onboard Switch Functions



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

Connection Diagram

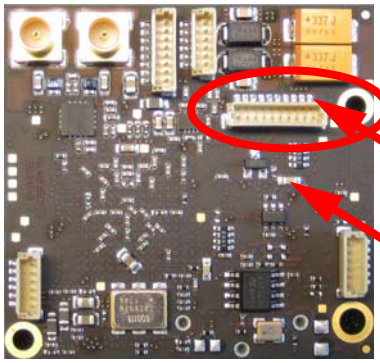
TL7550/TL7552 top side



30pin Micro Coax Cable

KSM203 or KSM201L Camera

TL7550/TL7551 bottom side



J1, 12V DC Power input, Reset and RS232/TTL serial interface

Pin 1 location

Temperature alert signalling LED (red colour when on)

Temperature Alert Function

When board temperature exceeds 80°C (176°F), red LED will be switched on.

In addition such an event can be signalled on connector J1/pin7 by setting switch 3 (temp alert enable) to ON position.

- In case board temperature is equal to or over 80°C (176°F), level on J1/pin7 will be held constant low (< 0.4V)
- In case board temperature is less than 80°C (176°F), level on J1/pin7 will be high (> 2.4V)

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

Reset Operation

When applying power to TL7550, TL7551 or TL7552, the camera is also automatically powered. During power up all functions on the video transceiver boards, 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 RS485, RS232 or serial 3.3V TTL interface to TL7550, TL7751 or TL7552. The interface is passed through to the camera that all VISCA protocol based software can be used.

Serial interface selection must be done by appropriate setting of switch-2.

Cable Kit Contents

TL755xCK cable kit:

External connecting cables:

1 pcs. - 10pin flying leads cable for power and control (RS232/TTL), 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

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