

FHD LVDS to 3G-SDI plus analog YPbPr
Transmitter

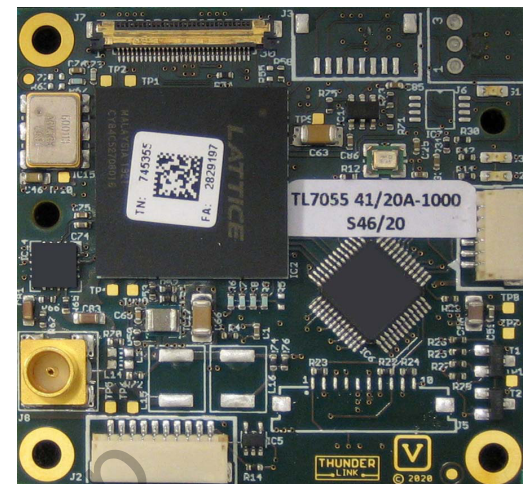
Data Sheet & Operation Guide

Features

- + Native video output up to 1920x1080p @ 60fps
- + Seamless connection to zoom camera blocks with industry standard LVDS interface
- + SMPTE compliant tri level sync on Y
- + Video format support:
 - + 1080p60 /59.94 /50 /30 /29.97 /25 Hz
 - + 720p60 /59.94 /50
- + SDI only:
 - + 1080i60 /59.94 /50
 - + 720p30 /29.97 /25
- + RS232 level serial camera control interface
- + VISCA controlled Embedded Test Pattern Generator
- + Supply voltage 9V to 12V DC regulated
- + RoHS and UL/UR compliant
- + TLCK-B6 Cable Kit included

Applications

- + Full HD integrated cameras with 3G-SDI plus analog HD YsPbPr output requirements
- + Industrial, medical, security, law enforcement



General Description

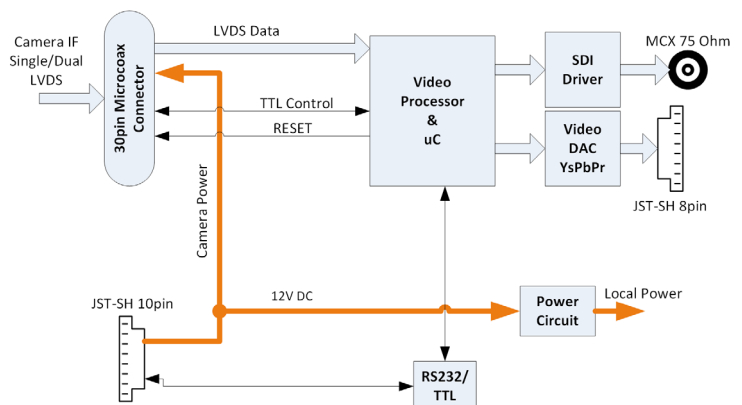
TL7055 is a small form factor full HD 3G-SDI plus analog YsPbPr output video transmitter. Camera LVDS video input signals are demultiplexed, processed and encoded. 3G/HD-SDI Video is output over a MCX connector. Analog YsPbPr Video is output over a 8pin board to wire connector.

Camera control is accomplished by a transparent full duplex communication channel. Physical layer between camera and camera controller is based on a RS232 level interface.

TLCK-B6 cable kit is included and contains a 30wire micro coaxial cable for connecting TL7055 to the camera, a 10wire power supply and serial control cable harness and a 8wire cable harness for the analog YsPbPr video output.

Quick Specification

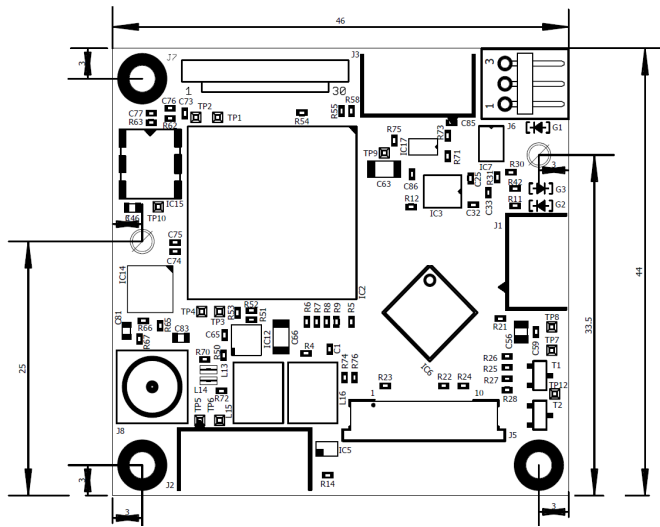
- LVDS (8CH/4CH) interface on 30pin microcoax connector
- Up to 1920x1080@60fps SDI plus analog YsPbPr video output
- Supply voltage 12V DC
- Operating ambient temperature range -10°C to +60°C
- Operating humidity range 20% to 80%
- Power consumption 5.6W with 12V DC supply voltage with Sony FCB-EV7520A camera
- Board size (L x W) 46mm x 44mm
- Wire/cable kit for camera and external interconnect
- RoHS compliant (2002/05/EG and 2011/65/EU)
- UL/UR compliant



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Board Mechanical (top view)



- + 3D CAD model (step) is available on request
- + Board size 46mm x 44mm
- + Mounting holes drill diameter 2,6mm, land diameter 5,0mm

LED Indicators

- + LED G1: Boot Cycle Indicator
- + LED G2: Test Pattern ON Indicator
- + LED G3: Power On Indicator

Analog Video Output Specification

- + Ys 1Vpp into 75 ohms, tri level sync amplitude 300mV
- + Pb, Pr 0,7Vpp into 75 ohms

SDI Video Output Specification

- + 3G-SDI output compliant to SMPTE 424M level A
- + HD-SDI output compliant to SMPTE 292M

Onboard Connectors

J2: Power & Control (JST SM10B-SRSS-TB)

- DC Supply voltage input
- DC Supply voltage input
- GND (0V)
- GND (0V)
- Reset*
- GND (0V)
- Do not connect
- Do not connect
- RXD_232 (serial IF receive RS232 level)
- TXD_232 (serial IF transmit RS232 level)

*Pull pin 5 to GND(0V) for 1ms or longer for reset, leave open for normal operation.

J7: Camera Interface (KEL USL00-30L-A)

30wire microcoax connector for camera IF. Use 30wire micro coaxial cable supplied with cable kit.

J8: SDI Video Output (Samtec MCX7-J-P-H-ST-SM1)

J4: YPbPr Video Output (JST SM8B-SRSS-TB)

- HSync
- VSync
- GND (0V)
- Pb signal output
- GND (0V)
- Ys signal output
- GND (0V)
- Pr signal output

J1: Do not connect/not assembled

Power and Environment

POWER INPUT:

9V to 12V DC regulated supply input voltage range

CHARACTERISTICS:

$P_D = 5.6W$ (FCB-EV7520A camera lens steady +TL7055)

$P_{TL7055} = 2.32W$ (typ.)

(12V DC supply, 1920x1080@60fps, $T_A = 25^\circ C$, Humidity = 35%)

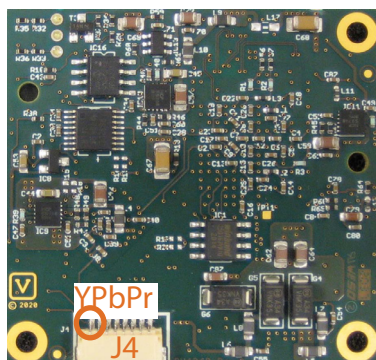
OPERATING AND STORAGE CONDITIONS:

Ambient temperature (min/max) $-10^\circ C/60^\circ C = 14^\circ F/140^\circ F$

Humidity: 20% - 80%

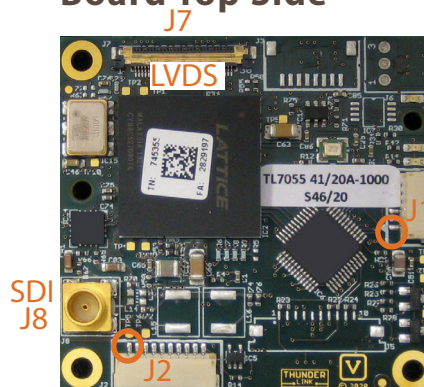
TL7055 is RoHS compliant (2002/05/EG and 2011/65/EU)

Board Bottom Side



Pin1

Board Top Side



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

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Board Operation:

TL7055 operates fully automatic with respect to outputting video over SDI and analog YsPbPr. Sync is provided as SMPTE compliant tri level sync on the Y signal.

The output video standard is defined by the video standard of the video signal source. TL7055 locks automatically to the signal source as long as the provided video format is supported (see page 1 for supported video modes).

The video source is typically a block type camera or equivalent device providing digital 4:2:2/8bit per component video as 7:1 serialized data stream. This data stream is transmitted over 4 (single mode) or 8 (dual mode) LVDS channels from the video source and is received and demultiplexed by the video processor on TL7055. In all cases embedded sync (SAV/EAV) codes must be present in the LVDS data streams. In case of dual mode it must be present in both channels.

In case of block type cameras, the respective camera register must be set correctly for single or dual LVDS output mode.

TL7055 requires dual LVDS mode in case of 1080p60, 1080p59.94 or 1080p50 video. For all other video standards single LVDS must be chosen in the camera.

When the video standard and/or the LVDS output mode is changed in the camera, TL7055 must get a power reset cycle to lock on the new system settings. Such a reset cycle can be achieved by switching power off and on again or by applying a reset to pin 5 of J2 (see page 2 for details).

The camera (or video source) can be controlled over a transparent, full duplex data channel. TL7055 does not process or change any control data. The full duplex data channel can be accessed by the RS232 interface of TL7055.

Test Pattern Generator (TPG) mode:

TL7055 has an integrated test pattern generator which can be activated and deactivated by VISCA commands. Such settings are not permanently stored. That means every time power is switched off and on again, the TPG is not activated as default.

TPG can be activated even when no camera or video source is present. TPG starts always with providing a 100% color bar pattern in 1080p60 mode. This can be changed by VISCA commands afterwards.

The TPG is seen as a VISCA device using highest VISCA address 0x87. It is required to use a baud rate of 9600bps with 8N1 serial data configuration for TPG control.

The following VISCA commands are available for TPG control (all codes as hex values):

TPG activation:

87 01 00 24 01 08 0A FF

TPG deactivation:

87 01 00 24 01 08 06 FF

TPG pattern type 100% color bar:

87 01 00 24 04 00 04 FF

TPG pattern type multi pattern with moving block:

87 01 00 24 04 00 00 FF

TPG video standard:

87 01 00 24 01 0p 0q FF

pq = 01 for 1080p50

pq = 09 for 1080p60

pq = 11 for 720p50

pq = 19 for 720p60

TPG Multi Pattern Image



The small square is moving horizontally. It has green color when moving from left to right and magenta color when moving in the opposite direction.